

THE OTTAWA NATURALIST

VOL. XXXII.

DECEMBER, 1918.

No. 6.

THE MCGILL TOTEM POLE.

By C. F. NEWCOMBE, M.D., VICTORIA, B.C.

This pole has been in the possession of McGill University for a great number of years, and it seems that the data which must have accompanied it have disappeared. The writer, about ten years ago, obtained, through the kind assistance of Dr. Adams, then in charge of the Redpath Museum, the negative from which the full length plate has been engraved. It was his hope that he might be able to learn, from Indians whose villages he was about to visit, something of the original owner, and the meaning of the various carvings. In this hope, however, he was disappointed. No one could recall the sale of such a pole, but at Masset it was agreed that it bore a close resemblance to a figure in Dr. J. R. Swanton's "The Haida" (Jesup N. Pac. Exped., V, pt. I, '05, p. 127, Pl. V, f. 1).

The two parallel columns will bring out more clearly than a mere description the closeness of this resemblance as regards the carvings:—

THE MCGILL TOTEM POLE	DR. SWANTON'S MODEL
Top Figure: Small bear on top of narrow cylindrical pole.	Similar, but cylinder segmented.
Second: Large bear with long projecting tongue and a face shown in each ear.	Same, but tongue longer and said to represent a large labret.
Third: Another seated bear with shorter tongue.	Bear shown at full length.
Fourth: Raven, with long projecting beak.	Same.

There is nothing at all like the McGill pole in the large series of photographs of Haida and Tsimshian villages, which represent literally hundreds of totem poles.

MEANING OF FIGURES.

Dr. Swanton's explanation of the model from which the plate quoted was made is as follows, given verbatim:—

"The original of Plate V, Fig. I, belonged to Qogis, Chief of the Point Town People (R. 14), and stood in front of his house, Fort-House (Taodji Naas), on a hill close to Masset. At the bottom, above the doorway of this house, are a frog and a raven. The frog is introduced because ravens were said to eat frogs. All the other figures on this pole illustrate the story of the man who married a grizzly bear. The principal figure of this group, clasping in both hands what has the appearance of a tongue, but what was explained as a long labret, and wearing a dance-hat, is the Grizzly-Bear-Woman; below, and held in her embrace, are her two cubs; while still lower down is the full-length figure of another bear, representing her husband. Sitting on top of the dance-hat is still another cub."

There are several versions of the story to which Dr. Swanton refers. That one quoted by him, which was obtained from a Masset source by Dr. F. Boas, is as follows:

In this version the hunter belonged to the Eagle clan and was named Gats. Unsuccessful in his hunting he was one day seized by a bear which carried him to his den. The she-bear hides him between her legs. The bear goes hunting, and on his return asks his wife what became of the man. She says that he only brought his belt. She marries the man. The dogs (the man has two) return to the village. The people follow them, discover the he-bear, and kill him. The man and the she-bear have a child. Finally he is homesick, and his wife allows him to return.

The she-bear forbids him to look at his former wife. One day he goes hunting with his two human sons. He meets the bear and gives her food.

In each case there are certain small additional figures, which are shown on otherwise unoccupied surfaces of the large carvings. These are not identical, but as they are mainly ornamental and of no significance as crests, this disparity is of no moment.

His companions are afraid. One day when he is drawing water he meets his former (human) wife and smiles at her. Next time when he takes seals to his bear wife her ears are turned forward. She jumps into the water, attacks him, and kills him and his two sons.

In a Tlingit version given by Dr. Boas, the man and his bear wife have three children. The children, according to most of the versions, took the form of bear cubs, but, when indoors, take off their skins and are then human.

If the writer's inference is correct, and if Dr. Swanton's explanation of his plate may be applied to the McGill example, it will follow that only two crests are displayed, and that these are significant of the two great divisions into which the Haida are separated. The grizzly bear is one of the commonest crests used by families belonging to the Raven Clan, and the raven, for some inexplicable reason, is used only by the other division, the Eagle Clan. The remaining smaller figures do not represent crests, but only fill up space artistically and add to the seeming importance of the pole.

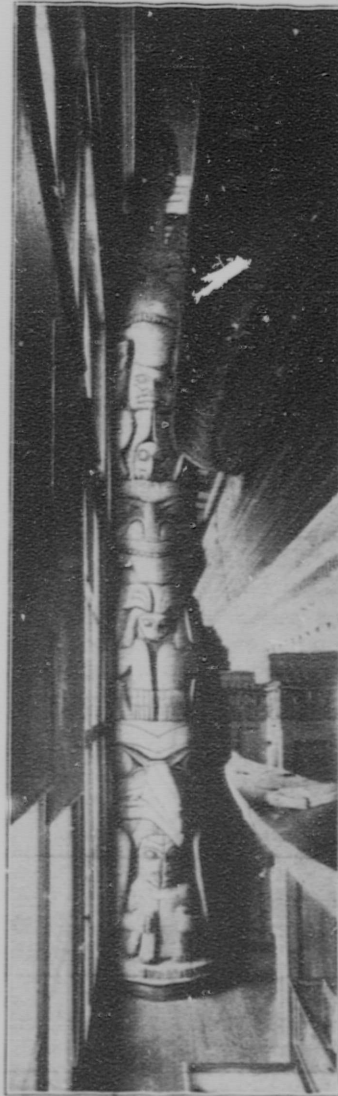
Dr. Swanton (l.c. p. 270) states that Qogis, or Qogits, a name meaning "common sea-otter", belonged to a family which originally lived at Rose Spit, at the extreme north-east end of the Queen Charlotte Islands. The name of the family is Kunalanas, the "town-people of the point", and this family was entitled to use certain crests, which are given in this order:—grizzly bear, Tcamaos (a mythical floating snag with magic powers), killer-whale and sea-lion, with, possibly, others.

All of these crests are used by the Raven Clan. The raven must have belonged to the wife of Qogis. Both the raven and the grizzly bear are used by a great many families of the two clans and it would be impossible, therefore, without the aid of someone with local knowledge, to determine to whom the pole belonged.

Returning to the consideration of the McGill pole, it will be noticed that in addition to the three larger figures already mentioned there are four smaller ones. Taking these in order from above downwards, the uppermost is placed between the elbows and knees of what the writer supposes to be a female grizzly bear. A somewhat human head is seen above a pair of folded wings, below which is the head of a bird with short curved beak. The lower (he?) bear is holding a frog in its paws. The raven, at the bottom of the pole, shows a seated human figure below its beak. Of these four figures all that can be said is that, in addition to their purpose as ornament, they may also have reference to one or more of the numerous Haida stories. The lowest may quite probably illustrate some incident

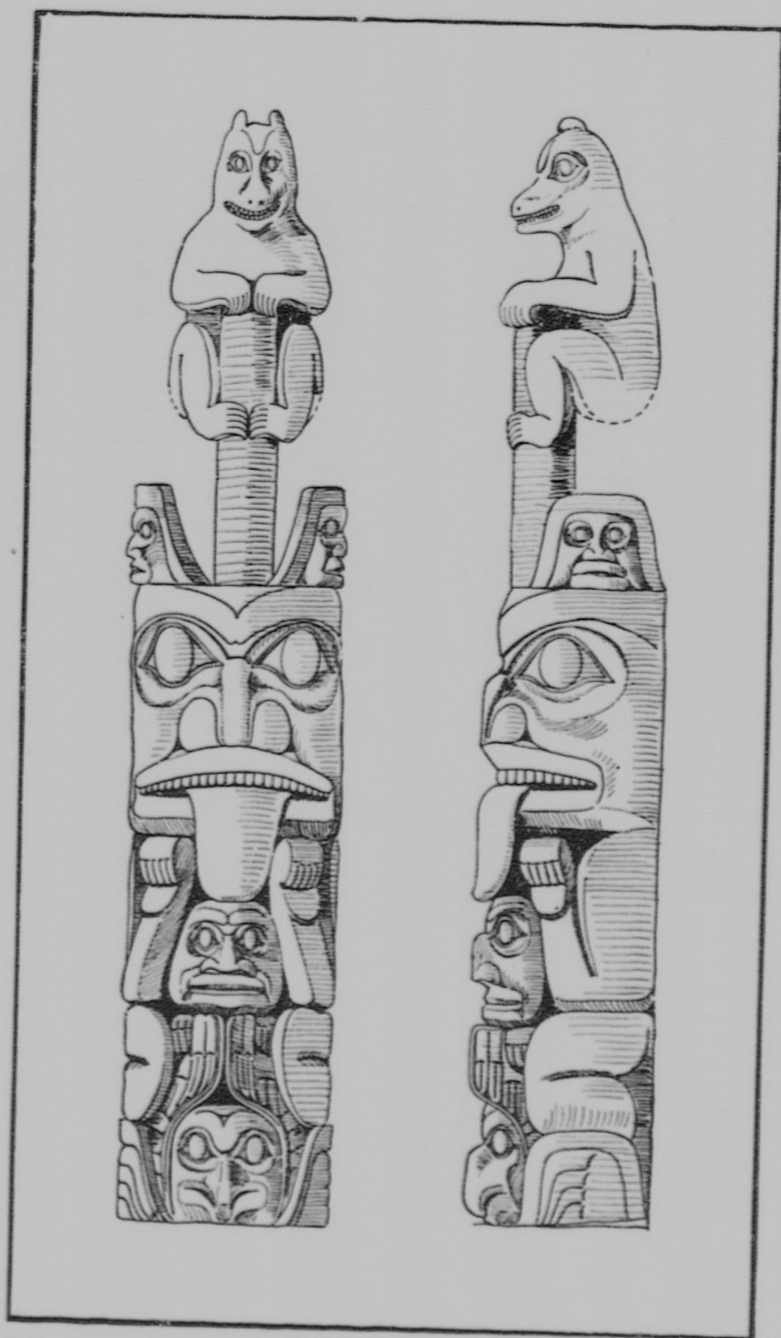
in which the raven assumed a human form. This it repeatedly did according to the old myths.

Whilst it must be admitted that there are minor differences between the original pole and that which is assumed to be a model of it, these differences are



The McGill Totem Pole, exhibited in the Respath Museum, Montreal, Que.

certainly less than those which occur in the case of another totem pole, which was acquired by the writer, and a model of it which was obtained by the resident missionary at Masset. The pole in question was purchased for the British Museum from a village close to Masset, and the model was



Architectural drawings of the upper part of the pole.

made at Masset itself. Both of these were described by Dr. A. T. Joyce in the *Journal of the Anthropological Institute*, Vol. XXXIII, 1903, Pls. xix, xx. The model was sent to the Museum in 1898 and the original in 1902 or 1903.

The first mention of totem poles on the north-west coast of America, so far as the writer knows, is that contained in *Cook's Third Voyage* (Vol. II, p. 317, Pl. 42). Two short squat posts are described and illustrated as standing inside a house at Nootka. Cook was unable to find out the meaning of these poles, of which there were numerous examples in the village, owing to want of knowledge of the language of the owners. This was in 1778.

Some years later the Spaniards, who had long occupied Nootka, came to the conclusion that these carvings were simply ornamental and only of significance in respect to the man whose supporters had contributed to the raising and putting in place of such timbers. The writer has purchased many such objects, and in each case it was explained by the seller that the carving represented either an ancestor of his family or some incident where real or mythical animals of supernatural power showed some favor to such an ancestor. (*Relacion del viaje por los Goletas Sutil y Mexicana*, etc., etc., Madrid, 1802, pp. 128, 129.)

The next reference, and this time to poles of Haida make, is contained in *Mearns' Voyages* (London, 1790, p. 367). Here, while recounting the experiences of Captain Douglas in the "Iphigenia" at the north-west end of the Queen Charlotte Islands, he speaks of "the great wooden images of Tartanee" but gives no further description of them. Fortunately, two years later, this place was visited by a French ship, the *Solide*, and many pages of the journal of the voyage are devoted to an account of this region. (*Marchand, Voyage Autour du Monde*; Paris, Tome I, 288-362). On pages 299-300 is a passage, too long to quote in full, which states that the door of the houses was elliptical, about three feet high and two wide and passed through the base of a large high trunk placed vertically in front of the centre of the houses. The door took the form of a gaping mouth, and was surmounted by a hooked beak about two feet long, proportioned in size to the monstrous figure to which it belonged. Above this was a squatting human figure and above this again a gigantic statue of a man in an erect position, wearing a hat of sugar-loaf shape, the height of which was almost equal to that of the man himself. On those parts of the surface not occupied by the principal subjects there were scattered here and there carvings of frogs or toads, lizards and other animals and the limbs of the human body. It was explained by a chief that

the erect human figure represented a man of high rank who was venerated in this country.

It was learned independently, both by Dr. Swanton and the writer, that in the early days instead of poles the Haida used large cedar planks for the display of their crests, etc., in front of their homes, and that the doorway often passed through the centre of these planks. That the use of this flat form overlapped that of the cylindrical one is indicated by the fact that the writer was able to procure a very old specimen at Skidegate for the Provincial Museum at Victoria, B.C. This form was also in use up to a late date at nearly all of the Haida villages to show the crest of the occupants of large mortuaries. The only specimen still in existence known to the writer was procured from Skedans by the writer for the Field Museum of Natural History at Chicago. The mortuary form closely resembled that of the large carved chests showing the head of some animal in bold solid work while the limbs are shown on each side of the central head outlined by deep incised work, and all painted in the usual colors. It is clear that Marchand's description of two tablets seen by his party at the west end of what is now called Lucy Island, close to Dadens (Tartanee of Douglas), applies to carvings of this kind. These were eight or nine feet long by five in height, and were made of two planks joined together. Represented on them in red, black and green colors were seen the different parts of the human body covering the whole surface. (*Marchand, l.c.*, p. 295).

Respecting the antiquity of the style of totemic display afforded by the vertical poles, the older Haida say that they are of comparatively recent origin, and that tradition says that they were not made until iron chisels came into use. It is believed that iron tools were unknown to the inhabitants of the north-west coast before the Russians made their appearance in what are now Alaskan waters. This would be about the year 1741. In 1774, when the coast of British Columbia was first discovered, iron tools were noticed by the Spaniards under Perez in the possession of the natives both of the Queen Charlotte Islands and of Nootka. (Documents from the Sutro Collection, Historical Soc. of Southern California, Los Angeles, 1891, pp. 121, 132, 203.) Iron tools were more plentiful, apparently, when Cook visited Nootka in 1778, as he speaks of seeing at this place iron ornaments, arrow points, chisels and knives with thin curved blades. (*Cook's Third Voyage*, II, pp. 271, 330.) Cook was of the opinion that iron was too common, in too many hands, and its use too well known for the natives to have had the first knowledge of it quite recently or by an accidental supply from a ship. Nevertheless,

it was in great demand, and, even in 1789, after free distribution of this material by other traders, Captain Gray of the *Lady Washington* was able to purchase a large number of sea-otter skins at the rate of one chisel each. Already, too, delicate carving on horn and bone was found at several localities.

TOTEMISM AMONGST THE HAIDA.

Crests.—As stated by Swanton (l.c., 107), each Haida family had the right to use a certain number of crests, i.e., figures of animals and certain other objects during a potlatch; or they might represent them upon their houses or any of their property, and tattoo them upon their bodies. With one or two exceptions the two clans already mentioned, the Raven and the Eagle, use crests which are distinct from one another. Of the two sets of crests the Raven Clan, which is considered to be older than the Eagle Clan, uses the killer-whale universally, and nearly every Eagle family uses the eagle.

Of the Raven crests the grizzly-bear is next to the killer-whale in frequency of occurrence, with the rainbow and supernatural snag next in order. Swanton records thirty-three Raven crests in all.

Of the Eagle crests, next to the eagle itself follow the beaver, sculpin, frog, whale and raven in frequency. Swanton lists thirty Eagle crests in all.

Although there are traces which indicate that the personal manitou and the religious ideas of the Haida may have had some part to play in the

development of their crest system in early days, at present these influences seem to be very weak, and it has now become a kind of heraldry by which an individual may make known his or her rank and position in the social scale.

Some of the old chiefs say that until of late years totem poles could not be erected by women, but for a long period, only ending with the cessation of the potlatch and the old ceremonial customs, it was not uncommon for the woman's crest to be carved upon her husband's pole and, when her body was placed in a vertical mortuary pole, to have her crest alone in front of her coffin. A fine specimen of this from the Haida village Tanu is in the Museum at Victoria, B.C.

As compared with similar carvings amongst other native stocks in British Columbia, Haida totem poles are, in general, of wider proportions than those of the Nass River and Skeena peoples, Tsimshian, and of more regular lines than those of the Kwakiutl, a people who seem to have a much more grotesque imagination. Of late years the Kwakiutl and the Noctkans of the west coast of Vancouver Island have endeavored to copy the Haida style of carving and examples may now be seen at Nootka itself and at Ehatisset, whilst more numerous specimens have quite recently been erected at Fort Rupert, Gwaestums, Tsatsichnukwomi and Tlaotisis amongst the Kwakiutl.

LOCATION OF TOWNS AND VILLAGES IN THE OTTAWA VALLEY.

BY J. KEELE, OTTAWA.

(Continued from page 97.)

The Bonnechere river enters the Ottawa about 12 miles above the mouth of the Madawaska, and like the latter has its source in the Algonquin Provincial Park in the Laurentian highland.

The French Canadians, who were always among the pioneers in lumbering operations, called it the river of "good living" or Bonnechere, probably on account of the good quality and quantity of the pine along its banks, the ease of navigation and the abundance of game and fish.

The valley of the Bonnechere is one of the most remarkable physical features of the region and unlike the other tributary streams its valley is deeply indented far into the Laurentian upland.

The physical geography of this valley has never been studied in detail by anyone, so that only the most superficial facts concerning it are known. Its

origin and history are certain to furnish interesting and difficult problems to the future physiographer.

The valley is quite narrow in the lower part but above the town of Renfrew it opens out in wide plain-like expanses trending in a northwesterly direction. From 35 to 50 miles west of the Ottawa the valley is occupied by two large lakes, Golden lake and Round lake, which are situated directly on the course of the river. The difference in elevation between Round lake and the Ottawa is about 335 feet. This drop is taken up by five chutes or falls, three of which have towns or villages situated on them. Renfrew is on the second chute, Douglas on the third chute, and Eganville on the fifth chute.

The valley is bounded by escarpments of gigantic rocks, the northern escarpment being comparatively low and broken by smaller tributary and through

valleys at several places, but the southern escarpment is a continuous and imposing feature, rising in places to a height of 1,000 feet above the river.

Except perhaps from the top of Mount McKay near Fort William there is not a more spacious view to be obtained anywhere in Ontario as that from the high points of the ridges south of Eganville along which the Opeongo road runs. From any of these points the broad trough of the Bonnechere with its large lakes is seen in the foreground; beyond this are the ridges between the Bonnechere and Muskrat lake valley, then the ridges between Muskrat lake and the Ottawa valley, beyond which is seen the great escarpment of the Laurentian highlands of Quebec 45 miles away. (See fig. 2.)

Renfrew, the largest town in the Ottawa valley had its beginning in circumstances connected with the lumber industry in 1820. The reader is referred to "The Story of Renfrew", by Mr. W. E. Smallpiece, for details concerning the early settlement and history. Only a few references bearing on the particular phase of the development we are considering will be given. "Before 1833, Captain Bell started a mill at Castleford, better known as First Chute. This mill was never a success as it was a difficult place to maintain a dam. In 1834, Messrs. Miller and Carmichael built a grist mill on a little dam on Hurd creek now known as Smith creek. This mill did a thriving business until the establishment of the McDougall mill at the Second chute,



Fig. 1

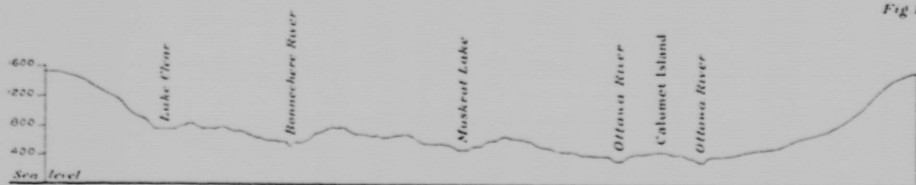


Fig. 2

Fig. 1. Map of a portion of Renfrew county, showing the Bonnechere river, and its connection with the Ottawa.

Fig. 2. Section from southwest to northwest across the Bonnechere and Ottawa valleys.

Occasional patches of paleozoic rock, principally limestones and shales, extend up almost to Golden lake, but the rocks on which these were laid down, such as granite gneisses or other igneous rocks, are the ones mostly seen. Bedrock of any kind, however, is seldom observed in the broad valley bottom as there is a great thickness of sandy and stony drift over its whole length and on top of these in the lower portion of the valley is a thick layer of stoneless marine clay, except where isolated ridges of bedrock rise above the clay level.

The oldest and youngest rocks in the world may be seen in contact at the first chute, near Castleford, where the marine clay of late Pleistocene age rests on contorted Grenville limestone.

now the falls of the Bonnechere in Renfrew town. Before these mills were built the pioneer settlers in the neighborhood had to go to Prendergrasts, on the Quebec side of the Ottawa river with their grists."

The principal business during the early development of Renfrew was mainly concerned with lumbering. "To be a lumberman in those days was the supremest height to which business ambition could aspire. The small boys of that day played lumbermen with the same zest and earnestness that the small boy of modern times played circus or railway contractor."

The Opeongo road which leads from Renfrew westward up the Bonnechere valley and over the southern escarpment to the upper waters of the

Madawaska was built both as a colonization road and as a means of transporting freight to the lumber camps. Another highway serving the same purposes was opened up through the level ground of the valley bottom as far as Golden lake.

While the lumbering business was flourishing, the settlement and clearing of land in the neighborhood of Renfrew progressed steadily so that it became a place of some importance as a centre of population.

The first railway reached Renfrew in 1873, and later on we find the Canadian Pacific railway diverting its transcontinental line from the easier route following the Ottawa river to a more difficult one, in order to include the business which the town of Renfrew contributed.

There is a variety of good farming land in the vicinity of Renfrew. The district to the south, between the Bonnechere and Madawaska rivers has an undulating surface mostly covered with a thick sheet of boulder clay, whose weathered surface furnishes excellent soils. West of Renfrew there is a plain two to six miles wide and 12 miles long covered with stoneless marine clay over which the most approved farming machinery can be worked and where there is practically no waste ground (fig. 3). The soils to the north and east in the upland country are lighter in texture but nevertheless support a considerable farming population, on account of the presence of large areas of crystalline limestone underlying the drift.

Samples of the excellent products raised on the varied agricultural resources of this district form the principal attraction at the annual three days fair held in Renfrew exhibition grounds.

When the apparently endless forests of pine had disappeared from the Madawaska and Bonnechere valleys the commercial interest hitherto engaged in the timber trade had to adapt itself to changed conditions.

Fleur mills apparently never ceased to operate on the water power at Renfrew from the time it was first used for that purpose.

Two mills producing woolen goods are also located on the river. A brick and tile plant produces burned clay wares from the marine clay which underlies the greater part of the town. This plant has the advantage of being able to produce buff or red brick owing to the fact that the lower part of the marine clay at this point carries such a high percentage of lime that it overpowers the red coloring tendency of the iron content of the clay and imparts a buff color in the burning process. The greater part of the lime has been leached by weathering from the upper part of the clay so that the iron can assert itself in giving the characteristic red color to the burned ware. Tile for draining the nearly

level marine clay plain west of Renfrew finds a considerable market over most of this area. Not a foot of this land need be unproductive if it is properly underdrained.

The crystalline limestone in the vicinity of Renfrew has been quarried for building purposes, the post office being an example of its use in architecture. Its glistening white surface will probably keep fresh for a long time in this situation, but in a large city it would soon become dingy.

Quite an extensive use of the crystalline limestone is made in the production of quicklime for building purposes, the lime kilns being situated on an outcrop of this rock within the town limits.

The remarkable mounds of sand, gravel, and boulders and the curious bowl-shaped depressions that accompany them which occur close to the rock escarpment just north of the town are features resulting from glacial ice drainage channels. The kames, as the gravel mounds are called, furnish abundant supplies of material for concrete construction or road-making and are freely drawn upon for this purpose.

All the industries so far mentioned have a purely geographical reason for being at Renfrew, as they make use of the local resources for local needs.

Natural resources such as convenient supplies of material for building purposes, productive land to supply food in abundance, plenty of room for the comfortable housing of labor, together with water powers are geographic advantages which tend to the growth of industries in the region.

The possession of these resources with the aid of transportation facilities offered by two lines of railway have made it economically possible to establish at Renfrew industries using raw materials like iron and coal which have to be hauled for long distances.

The power furnished by the Bonnechere river proved in time to be inadequate to the increasing demands made upon it and one of the waterpowers of the Madawaska river was recently developed in order to supply the deficiency as well as provide for future needs in power. The rapids at the outlet of Calabogie lake on the Madawaska river were used for this purpose, the distance between this point and Renfrew being 15 miles.

DOUGLAS.

The village of Douglas is on the slope of a low ridge on the north side of the valley of the Bonnechere, 12 miles west of Renfrew. The river comes close to the foot of this ridge and flows over outcrops of shaly limestones in a series of rapids and falls with a total descent of 27 feet.

A wide depression tributary to the Bonnechere valley runs northward from Douglas and forms a large part of Bromley township. This depression

is flooded with stoneless marine clay, its surface standing at a slightly higher level than the clay plain in the Bonnechere valley into which it merges. The length of the combined clay plains from Renfrew to the furthest point in Bromley is 20 miles and its widest extent is 6 miles. The greater part of this land was sown with spring wheat in 1918 with excellent results.

Douglas is a small trading and social centre for the neighboring farming community. Its situation on the southern slope of a low ridge overlooking the valley makes it a desirable site for residential purposes, but it is doubtful if it will expand industrially owing to its proximity to Renfrew.

larged its passages until a considerable volume now issues from a cave on the north side of the river a short distance below the foot of the falls. There are a series of lofty caves in the cliffs below the falls, in addition to the one through which the stream discharges and probably formed in the same manner.

The lower limestone beds in the cliff are shaly in character and consequently very friable and easily worn by the action of running water. The upper beds are less easily disintegrated being massive and more compact in texture, and these form the roofs of the caverns.

Masses from the upper beds, however, are continually falling, according as the lower shaly beds

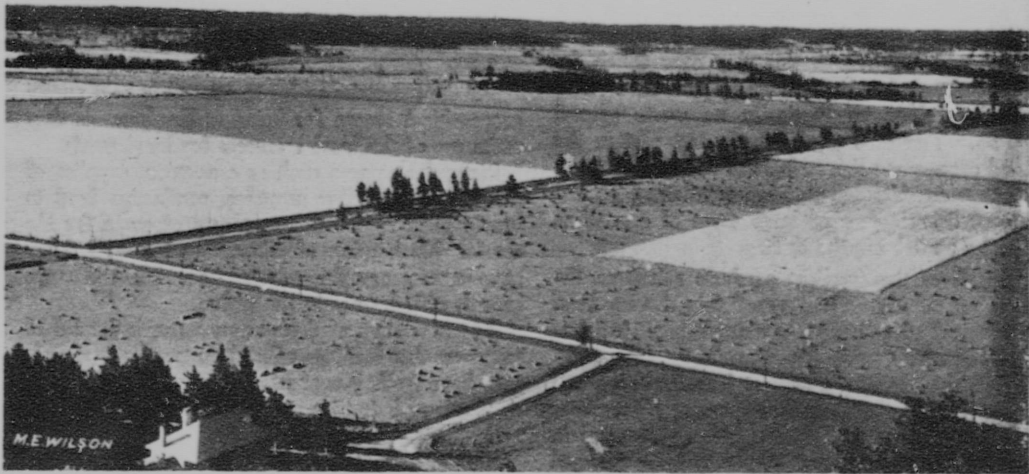


Fig. 3. The highly cultivated clay plain west of Renfrew, looking toward the southern upland border.

The clay land extends a few miles west of Douglas, but only in a very narrow strip along the river banks and ceases entirely near the fourth chute.

There is an extensive sheet of glacial outwash gravels at Caldwell station on the Grand Trunk railway four miles west of Douglas. The railway company has worked out a large excavation in using these gravels for ballast, so that good sections showing their character and structure can be observed.

FOURTH CHUTE.

At the fourth chute the Bonnechere river makes an abrupt descent of about 38 feet over ledges of flat lying limestone. A portion of the water above the falls finds its way down through lines of weakness in the limestone formation. By the processes of erosion and solution the running water has en-

larged its passages until a considerable volume now issues from a cave on the north side of the river a short distance below the foot of the falls. There are a series of lofty caves in the cliffs below the falls, in addition to the one through which the stream discharges and probably formed in the same manner.

These caves are an impressive example of the rapid erosion of comparatively soft rocks by running water, and the process is here revealed by which the removal of the greater part of the vast layer of paleozoic limestones and shales which formerly existed in the Bonnechere valley was effected.

EGANVILLE.

Eganville the ultimate village in the valley is situated on the fourth water power of the Bonnechere river, 23 miles west of Renfrew.

Mr. Alexander Murray, of the Geological Survey, when making the survey of the Bonnechere

river, in 1853, mentions Mr. Egan's farm at Eganville as growing excellent crops of wheat, oats, hay, potatoes, and other roots, besides having raised a large stock of horses and cattle. The country generally, however, throughout the whole region was essentially a lumbering rather than an agricultural district. Mr. Murray states, that "although the greatest part of the timber on the main river has long since disappeared—a large portion having been swept away by fire, independent of that removed by trade—there are still vast quantities brought down the river annually and made to descend to Ottawa by the course of the Bonnechere. On our way up the stream, we repeatedly found it almost entirely blocked up with squared timber, sometimes for miles together."

Eganville depends to a very small extent now on the lumber industry, being mainly a trading centre for the surrounding farming communities.

A large mass of boulder clay blocks the valley of the Bonnechere at this point, and the river has cut down through it to a depth of 40 feet. Good sections of this stony glacial clay are seen on the north side of the river just behind the post office. The business portion of the village is situated alongside the river in the bottom of the cutting and the residential section is on the terraces. Wooden stairs are used as short cuts by the residents when passing from one level to the other.

The soils derived from the boulder clay in the vicinity of the village are very productive, but further south the soils become more sandy in texture being derived mostly from fluvio-glacial sands and gravels. The presence of numerous rock ridges further curtail the agricultural possibility in this direction.

A curious condition due to glaciation on the slopes and top of the high southern escarpment is worth considering in more or less detail, as it concerns the geography of the district. The continental ice sheet moved nearly from north to south in this region so that it crossed the broad trough of the Bonnechere nearly at right angles. There was probably a considerable extent of the comparatively soft, flat lying paleozoic rocks consisting of limestones and shales, eroded from the valley bottom. The wet ground products of these made by the weight and movement of ice were carried along and plastered over the southern slope of the escarpment. This material contained a good percentage of clay substance and subsequently made good soils which were tilled wherever the slopes were not too steep. On the steeper slopes a magnificent crop of hardwood has grown up whose broad expanses of flaming color is one of the many attractions of the region every autumn.

The flat lying limestones and shales extended up the valley only a short distance beyond Eganville in pre-glacial times, so there was very little clay making material gathered up by the ice when passing this portion of the valley, consequently where the clay making materials cease in the valley the clay soils cease in the escarpments to the southward and are replaced by those of sandy texture.

Fifty years ago or thereabouts many people from middle Europe emigrated and settled in this and other parts of Ontario. A number of Germans and Poles were settled on the lands south of Eganville. It was the irony of fate that the people of that distressed country Poland were settled on the sandy portion of the escarpment and valley while the Germans were placed on the lands with clay soils.

The area lying between Wilno, Rockingham, and Barry Bay in Hagerty and Radcliffe townships is included in the Polish settlement. A great portion of this land is made up of porous gravel and sand heaps, mostly glacial moraine features (fig. 4) the remainder being rock ridges with thin sandy soils.

This district is mostly absolute forest land, unfitted for the cultivation of crops. The employment afforded by the lumber companies, however, enabled the Poles to maintain their existence in the face of great natural disadvantages.

Although the lands of the German settlement in Sebastopol township had a great deal of clay soils, the glaciation also brought along numerous boulders, which were strewn over the surface. With unremitting industry the men, women, and children of the community have cleared the fields from stones so that crops can be sown and harvested by machinery.

In recent years Eganville has become an important shipping point for live stock.

Owing to the uneven character of the surface and the spotted occurrence of land fit for cultivation, the farmers in this part of the Bonnechere valley frequently have considerable areas of wild land at their disposal. These lands are a source of fuel, pulpwood or cedar timber for posts, or grazing lands for cattle and sheep.

In some instances several adjacent farms have been entirely withdrawn from cultivation and the whole fenced in and used as a cattle ranch. The hay cut from beaver meadows and swamps in the vicinity is largely used for winter feeding for these cattle. This kind of farming is particularly well suited to the upland region remote from the railways as it is easier to have the crop walk down to the shipping points than it is to haul other produce over the hilly and poorly maintained roads of the region.

Kilns for the burning of limestone are located on the bank of the Bonnechere river a short distance

below Eganville. The flat lying beds of the paleozoic limestone which outcrops at this point are used for this purpose. Large quantities of quick-lime produced at these kilns have been shipped as far as Toronto.

BONNECHERE VALLEY ABOVE EGANVILLE.

The boulder clay soils do not extend very far west of Eganville but become merged into sandy types, the soils becoming more sandy and gravelly going westward, except in the wide flat portion of the valley between Golden lake and Round lake. This part of the valley is underlain by silt, and is productive and permanent farming land, but is restricted

Killaloe station on the Grand Trunk railway, 16 miles west of Eganville and near the south shore of Golden lake is a small local trading centre, but the most of the business of this part of the valley is tributary to Eganville.

RAILWAYS.

A branch of the Grand Trunk railway coming westward from Montreal through Ottawa enters the Bonnechere valley at Renfrew. This line, originally known as the Canada Atlantic, was constructed during the years 1892-97 for the purpose of assisting lumbering operations in the highlands between the Ottawa and Muskoka waters, and also as a link in

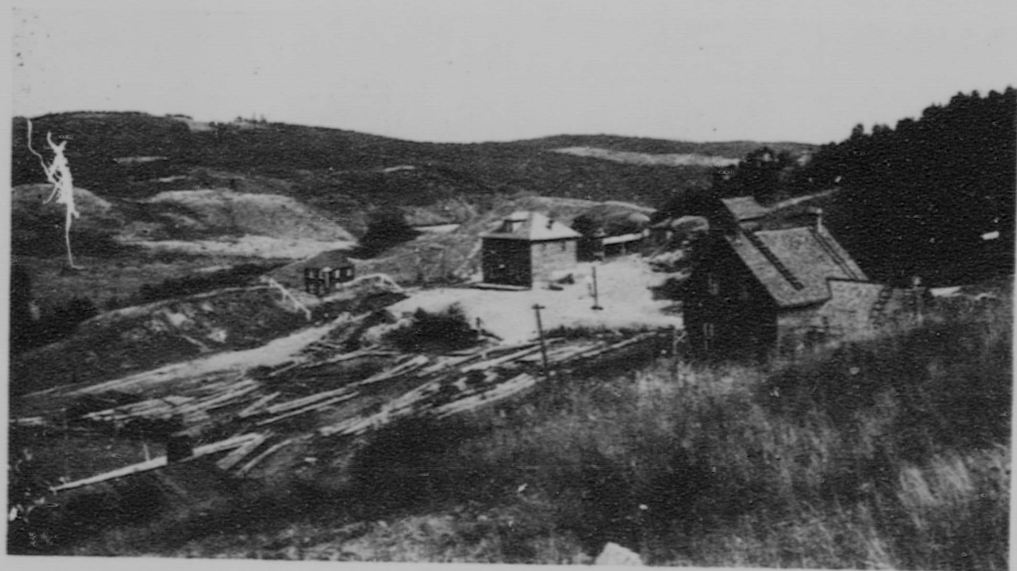


Fig. 4. Wilno station on the Grand Trunk railway. The bare hills are mounds of fluvio-glacial sands and gravels unfit for the cultivation of crops.

height of 400 feet above the water borders the northern shores of the two lakes and the intervening in area. A steep walled escarpment rising to a silt plain. The extensive upland north of the escarpment is composed of solid granite gneiss ridges without a particle of limestone and absolutely bare of soil. It is one of the most repellent and barren districts in the region, now that it has been denuded of its forest covering.

A few settlers endeavor to cultivate the sandy and gravelly lands around the shores of Round lake, but settlement practically ends here. The few habitants who live west of this depend largely on the chase of the fur-bearing and other animals which incautiously venture outside of the sanctuary of the Algonquin Park.

a grain carrying route from the west having a terminus at a port on the Georgian Bay.

There is an easy grade up the bottom of the Bonnechere valley but on leaving the valley to go westward the escarpment presents serious difficulties to railway construction. The highland is reached, however, by taking advantage of a gap or depression, known as the Hagerty pass, which occurs just west of Golden lake.

This pass is about 300 feet lower than the general elevation of the upland. Its sides are lined with a series of mounds and ridges of gravel and sand of glacial origin, between which there is room for a railway line (fig. 4). The railway line leaves the valley bottom at Killaloe and reaches the summit of the pass two miles west of Wilno station (fig. 1).

The distance between these two points is 10 miles and the difference in elevation is 425 feet. The railway would have obtained a route over the highland without this heavy grade by following up the Madawaska river from Arnprior, but it was more desirable to divert the line into the Bonnechere valley so as to secure the business of the towns and villages located there.

Although the ridges and valleys in the Laurentian highland taken in detail or in small groups appear

to have no definite arrangement or trend, yet it is clear that the main drainage streams are flowing in a valley or series of valleys in echelon, having a general northwest-southwest direction.

Railway lines have no difficulty when proceeding in these directions but the nature of the surface as indicated above is unfavorable to lines which depart from the trend of these controlling features.

(To be continued.)

RANDOM BOTANICAL NOTES.

II. L'ISLET COUNTY, QUEBEC.

BY BRO. M. VICTORIN, LONGUEUIL COLLEGE, QUE.

While engaged in studies preliminary to the building up of a detailed flora of Quebec, the writer felt very keenly the lack of information concerning the limit reached along the St. Lawrence river by a number of boreal and halophytic types.

He then proposed—and it was his good fortune to realize—a collecting trip to L'Islet, a small riverside town situated about fifty miles below Quebec city, and fifty miles above Rivière-du-Loup. Both Quebec and Rivière-du-Loup having been repeatedly visited by trained botanists, it was thought that a visit of a few days half-way between these two places would furnish valuable data on that semi-halophytic section of the St. Lawrence river. Consequently, the last week of August, 1916, was devoted to botanizing in the region.

The district consists of a narrow plain bordering the St. Lawrence river and limited on the southeast by a central highland which slopes gradually into the valley of the St. John river. The highland which has an average elevation of about 1000 feet above sea-level, is sharply separated from the plain by a prominent fault escarpment. The rocks are mainly red and green shales, black shists interbedded with quartzites, the assemblage of these being now known to geologists as the Islet formation.* Furthermore, the peculiar quartzites and conglomerates known as the Kamouraska formation are also represented by a few detached hills standing prominently over the country.

Botanically, it was found that the shore line and the occasional protruding Cambrian rocks thereon were unusually interesting, but in the interior of the country, on account of its being thickly settled at a very early period, little of interest was noted.

The waters of the St. Lawrence river are still practically fresh at L'Islet. Off shore, however, the sodium chloride is noticeable at high tide. I have heard it said that water drawn from the river does not freeze easily in winter and is worthless for skating rinks, these facts pointing to the presence of a small percentage of sodium chloride.

The beach flora as it could be observed at this late season was composed in the main of nearly pure strands of *Scirpus americanus* Vahl., and *Zizania aquatica* L., the former being especially important there as a turf-forming species. Among other hydrophytes of interest were noted the following:

- Scirpus pauciflorus* Lightf.,
- Phragmites communis* L.,
- Juncus Dudleyi* Wiegand,
- Juncus nodosus* L.,
- Juncus bufonius* L.,
- Triglochin palustre* L.,
- Potamogeton bupleuroides* Fernald.,
- Potamogeton epihydrus* Raf.,
- Heteranthera dubia* (Jack.) MacM.,
- Iris versicolor* L.

Iris versicolor as it occurs on the shores of L'Islet, Trois-Saumons and Saint-Jean-Port-Joli is a rather perplexing plant seeming to verge toward the American form of the boreal and coastal *Iris setosa* L. In these localities the range of both species may overlap and the hypothesis of hybridism naturally presents itself to the mind. However, Dr. M. L. Fernald tells us he has observed similar forms of *Iris versicolor* far from the range of *Iris setosa*.

As far as our observation goes the only halophytes to reach so far up the St. Lawrence river are the following:

- Ligusticum scoticum* L.,
- Ranunculus Cymbalaria* (Pursh.) Greene,
- Solidago sempervirens* L.

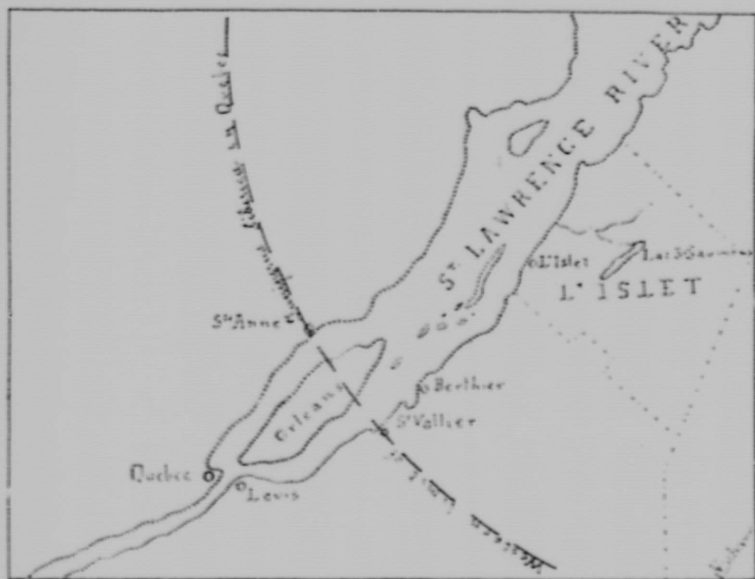
*Dresser, J. A. Reconnaissance along the Trans-continental Railway in Southern Quebec. Geological Survey, Memoir No. 25.

The range of the halophytic goldenrod is thus notably extended westward. On the other hand, *Ranunculus Cymbalaria* was to be expected as it is sometimes found inland; Bro. Rolland has recently met it near Ottawa city. To this small list of halophytes must surely be added *Plantago decipiens* Barneoud, which we collected twenty-five miles above L'Islet, at Berthier-en-bas. The Berthier locality is exactly half-way between L'Islet and the city of Quebec.

L'Islet owes its name to an isolated outcrop of conglomerate and limestone protruding from the muddy shore. The very short distance between this and the mainland has been bridged by the wharf which furnishes easy access. A few hundred yards above, a geologically similar mass, but much smaller, emerges from the water. It is locally known as

plant had been hitherto recorded from Anticosti, the type locality, Newfoundland and the Mingan Islands. There was, however, in the Gray Herbarium an old record: "Quebec, 1860, Dr. Charles Pickering," which, owing to what was known then of the range of the species had always been suspected as far as locality was concerned. The discovery of *Gentiana nesophila* at L'Islet gives full authority to the Pickering label and we may consider this lovely gentian as fairly frequent along the St. Lawrence river from Quebec city to the Gulf and Newfoundland.

Thus roused to a high pitch of enthusiasm by the treasures of Rocher Panet we crossed to Rocher de L'Islet with unbounded ambitions, which, however, were only partially satisfied. At this late season of the year, many of the early floristic ele-



Map of L'Islet and vicinity, Quebec.

"Rocher Panet." The hollows left in the matrix of the conglomerate by the weathering of the dolomite inclusions, have given rise to a legend which any genuine L'Isleter will tell you.

Rocher Panet has yielded more than a surprise to us. *Astragalus alpinus* L., var. *Brunetianus* Fernald was a thing most interesting with its fine young fruit, while *Agalinis paupercula* (Grey) Britton in full flower occupied an extensive patch. The latter is apparently new to Quebec. But the climax of the day was reached when we found, hidden among tall grasses, a good number of late specimens of the little-known *Gentiana nesophila* Holm.* This

men's had withered beyond recognition, but we were able to collect the following:

- Selaginella rupestre* (L.) Spreng.,
- Juniperus horizontalis* Moench.,
- Rosa blanda* Ait.,
- Campanula rotundifolia* L.,
- Scutellaria parvula* Michx.,
- Euphrasia canadensis* Townshend.,
- Potentilla pectinata* Raf.,
- Draba arabisans* Michx., var. *orthocarpa* Fernald,
- Rumex maxicanus* Meism.,
- Cerastium arvense* L.,
- Woodsia ilvensis* (L.) R. Br.,

*For description of the plant see The Ottawa Naturalist, Vol. 15, p. 111.

We have previously hinted that nothing of more than usual interest was found inland, from the St. Lawrence to the height of land. Special attention was devoted to the collecting of *Euphrasia* which is abundant everywhere, but all the material secured turned out to be *Euphrasia canadensis* Townsend.

Near the shore, *Aster longifolius* Lam., the commonest of the genus along the lower St. Lawrence was found abundantly with here and there the bulky heads of *Angelica atropurpurea* L.

In a vale between two small and dry quartzite hills, the predominant plant was an extraordinary luxuriant goldenrod. Dr. M. L. Fernald, to whom the plant was referred, does not think it, however, to depart materially from the ubiquitous *Solidago canadensis* L. More experience with the goldenrods has convinced the writer that this species hybridizes more freely than is generally believed, and this may account for many of the unusual forms it assumes.

Lake Trois-Saumons is a romantic expanse of clear water lying in a trough of snow-white quartzite at about 1500 feet from sea-level. The lake is well-known for its being much spoken about in a book favorite with the French Canadians: "Les Anciens Canadiens," by Philippe-Aubert de Gaspé. Botanically, it has no outstanding features, for, *Chiogenes hispidula* T. & G., *Viola incognita* Brainerd, *Lycopodium clavatum* L., *Epipactis decipiens* (Hook.) Ames, *Dryopteris spinulosa* (Muell.) Kt. var. *intermedia* Underw., *Solidago macrophylla* Pursh. are familiar things in the northern woods.

The lake, encased in a rock very resistant to weathering, is remarkably free from mineral and organic debris, and altogether most unfavorable to the development of plant-life. *Juncus brevicaudatus* Fernald, *Carex Crawfordii* Fernald, *Potamogeton ephydrus* Raf., and an emersed form of *Callitriche palustris* L., were the only species noted, and even these were in no way common.

One of the plants whose distribution is considered to be typical of that of a group of many others in the St. Lawrence valley, is the shrubby *Juniperus sibirica* Burgsd. Though present in the valley of the Ottawa river, at least from Ottawa upwards, it has not, as far as we know, been recorded between Ottawa city and the Island of Orleans. In eastern Quebec, the westernmost stations known are those of Saint-Cyr and Provancher: east end of the Island of Orleans and Sainte-Anne de Montmorency, respectively. On the south shore there was no satisfactory record. We then profited by the opportunity offered of an auto ride from Lévis to L'Islet to watch the prostrate patches which are so conspicuous objects where they occur. The result of the survey was that *Juniperus sibirica* begins to appear at Saint-Vallier in the county of Bellechasse, exactly where the red shales of the Sillery Cambrian crop out. It is to be observed that Sainte-Anne-de-Montmorency, Island of Orleans and Saint-Vallier lie in a straight line perpendicular to the trend of the St. Lawrence river. We may then trace with more certainty than before a part of the curve that encircles the wide gap existing in the range of *Juniperus sibirica* in Eastern Canada.

BIRD LIFE IN THE BERMUDAS.

BY CLARENCE B. HUTCHINGS, OTTAWA.

The Bermudas are an ideal sanctuary for birds. These subtropical islands, some 300 or more in number, situated in the North Atlantic about 670 miles S.E. of New York, form a group of very charming and picturesque low-lying lands for the most part covered with junipers (*Juniperus bermudiana*). They are specially interesting for their wealth in bird life. These conditions are right from the standpoints of food, climate and protection for a great variety of the wild birds of North America. The many flower gardens in which roses of all kinds, lilies, begonias, crotons, oleanders, palms and the like, bloom luxuriantly all the year round are a special attraction; the mangrove (*Rhizophora mangle*) glades; the juniper groves; the huge Pride

of India trees (*Melia azedarach*); the wide spreading tamarinds (*Tamarindus indicus*); the highly coloured poincianas (*Poinciana regia*); and last, but more important than all these, the orchards and numerous fruit and truck gardens where luscious fruits such as grapes, figs, mulberries, pomegranates, sugar apples, Surinam cherries (*Eugenia micheli*), etc., hang in tempting bunches, free and open to all passers-by. Altogether this forms about as happy and rich a hunting ground for birds as one can well imagine.

The climate, too, is favourable. For the greater part of the year the weather is delightfully mild, the thermometer seldom going about 86° F. in summer and never below 48° F. during the coldest days in

February. The average mean annual temperature can be safely set down as 70° F., which figures, together with the above, may be verified from government meteorological reports.

But these are not the only advantages that our birds enjoy on the islands. There is one still to be added and it is that of a good and wise protective legislation which, it may be said with pride, is most rigidly enforced throughout the whole colony.

Here, then, is truly a garden of Eden for birds, an avian El Dorado, a haven of bird bliss, a veritable ornithic paradise. It is, therefore, not surprising that millions of birds visit these islands every year on their flights north and south at two periods of migration, some to remain for only a few hours, others to stay for months at a time.

About the beginning of March the returning tide of bird life commences to set in strongly from the South. The first arrivals are for the most part waders and shore birds, such as the curlews, plovers, sandpipers, snipes, etc. They are exceedingly shy, and one can seldom view them well except from a distance, as they run up and down hurriedly along the smooth edges of the sand beaches in search of food in the thick beds of brown seaweed which the tides have washed up in great quantities. A little later on toward the end of March or beginning of April, numbers of herons, cranes and ducks pass by, and about this time one may see night hawks skimming swiftly over the low marshes and swamps just about the dusk hour. Next follow the spring birds of the woods and orchards; the scarlet tanagers, the indigo birds, the rose crested grosbeaks and the American cuckoos. These last remain a great part of the summer and although not often seen, their joyous call may be heard in the quiet dells and woody hillsides of the country. Then come the long list of summer birds, among them being the cardinals, kingfishers, bluebirds, mocking birds, woodpeckers, warblers, finches, tropic birds, and a host of others too great to mention here.

The tropic birds (*Phaeton americanus*), or long-tails, as they are called on account of the one long white feather in the tail, come to stay throughout the entire summer. They can be seen in countless numbers at certain places where they assemble every year to nest, flying up and down, up and down, ceaselessly in the bright sunshine, all day long, constantly on the lookout for fish. A great number of the summer visitors stay behind during the warmer months of June, July and August to brood, and their presence in the parks, gardens and orchards as they flit here and there, gives one a source of real joy and happiness. Among these may be mentioned the cardinals, catbirds, rice buntings, blue-

birds, finches, vireos, humming birds and many others.

The ground doves, (*Chaemepelia passerina*), are indigenous to Bermuda. They are like miniature pigeons, very compact, soft grey in colour, with blue black spots on the wings; short bare legs, feeding on small seeds and insects, gregarious in habit, and always on the ground. Their note is a low, sweetly-plaintive coo, similar to that of the ring-dove. They are very tame, but if disturbed suddenly they quickly rise, making a strange beating sound with their wings and fly to some other spot nearby. The goldfinches (*Carduelis carduelis*), found so plentifully throughout the islands, although not natives, have become established there within the last 25 years. It happened that a passing vessel put into St. George's harbour for repairs, and while there, by some chance a large number of finches on board were liberated. These birds flew to the mainland, to Castle Harbour, St. David's Island and the neighbourhood, and found there a most hospitable refuge in the wooded dells and quiet, secluded places where they settled. Since then they have spread to all other parts.

The noisy, chattering, ubiquitous house sparrow is there in flocks of thousands. It is without doubt the most undesirable immigrant and a source of great annoyance to all who own fruit and vegetable gardens. These birds were introduced many years ago by Mr. Thomas Reid, a prominent citizen of Hamilton, who conceived the brilliant idea of importing several pairs of sparrows in the hope that they would be of great benefit in controlling insect pests. He lived to regret this, for the birds multiplied prodigiously and soon flocked into his lovely gardens and ate up the sugar apples, cherries and grapes, doing incalculable damage. They played havoc with crops everywhere, attacked and killed many of the native birds. The Legislature passed laws to destroy the pest. Rewards were offered for collecting the eggs. However the sparrows could not be done away with and to-day are as great a nuisance as ever. Undoubtedly they are the worst enemy of the song birds. It is not an uncommon sight to see half-a-dozen pugnacious cock-sparrows attacking a cardinal; the result is generally the death of the songster.

A large number of the feathered visitors, apart from their beauty and song, are of the greatest economic importance and benefit to the farmers and gardeners. Some feed exclusively on seeds during winter, like the shore larks and sparrows; others, such as the woodpeckers, nuthatches and warblers prefer insects only; the cuckoos find the hairy caterpillars a palatable dish. Bluebirds are indefatigable grub hunters. The white-eyed vireo (*Vireo griseus*) or chick-of-

the-village, as it is called, is another very valuable insect destroyer. It has the habit of alighting on the twigs of trees, swaying head downwards in every direction like an acrobat, jumping and flying from branch to branch, catching many an unwary insect as it goes. The catbird is very fond of small fruits, especially grapes, strawberries and cherries, the last being particularly relished. It repays for any pillage, however, by eating its full share of grubs and worms, occasionally favouring with a song.

Few countries, if any, offer better protection to bird life than Bermuda. Shooting is strictly prohibited. No one on the islands is allowed to possess firearms of any kind. One of the questions asked by the customs official as the newly arrived visitor lands is, "Have you any firearms?" If he has, the weapon is confiscated and is not returned until he departs. Under the Wild Bird Protection Act, any person attempting to shoot, trap, or interfere

with the liberty of any of the wild birds (sparrows and crows excepted) is liable to a penalty of \$25.00, and the mere fact of possessing a wild bird's egg is sufficient to constitute a breach of the law. Apart from the sparrows and a few hawks, the song birds enjoy comparatively a free and easy time. There are no snakes on the islands to trouble them, and the Bermuda boy, be it said to his credit, seldom robs a bird's nest.

There is much investigational and research work to be done among bird life in these summer isles, and to the ornithologist and student of Nature, Bermuda willingly opens her charming laboratory at all seasons of the year. Those who have taken advantage of this offer often wish to return again to follow up their investigations. The study of bird life is always an interesting one, but when presented under such ideal and unique conditions as the Bermudas offer, it becomes one of special instruction and fascination.

A PROMINENT MUD-CRACK HORIZON OF THE CEDAR VALLEY STAGE OF THE IOWA DEVONIAN.

BY CARROLL LANE FENTON.

The following notes relate to observations by the writer on a Devonian section showing good examples of mud cracks. This section representing the limestones of the Cedar Valley stage is exposed in the southeast quarter of Section 20 St. Charles township, Floyd county, Iowa, in two small quarries known as the Bloody Run quarries.

The section which the writer obtained at these quarries combined with an earlier section by Mr. Clement L. Webster of Charles City, Iowa, is given below:—

	Ft.	In.		Ft.	In.
16. Hard gray limestone, partly covered by drift	4		12. Thinly laminated, regularly bedded shaly limestone, buff or yellowish buff and showing throughout strong marks of mud-crack with occasional traces of ripple mark.....	1	6
15. Hard, fine, buff limestone with casts of a small species of <i>Naticopsis</i> , <i>Athyris vittata</i> (Hall), <i>Athyris spiriferoides</i> (Eaton), <i>Atrypa reticularis</i> (Linnaeus), and a small undetermined species of <i>Spirifer</i>	1	7	11. Regularly bedded, hard limestone of light yellow or buff color with bedding planes showing very distinctly on weathered faces. Upper part crowded with many very small concretions	1	8
14. Buff or yellow-buff limestone containing many small or moderate sized nodules and containing <i>Atrypa reticularis</i> (Linnaeus), <i>Athyris vittata</i> (Hall), and <i>Spirifer subvaricosa</i> (Hall), as well as large numbers of undetermined Stomatoporoidea	1	9	10. Yellowish buff, hard limestone, almost, if not entirely unfossiliferous with the upper portion crowded with small dark concretions	7	
13. Heavy, gray-brown limestone with numerous nodules at base.....	1	2	9. Thinly and evenly bedded, yellowish to brownish limestone, apparently without fossils	3	
			8. Gray brown limestone, in even beds of three to six inches no fossils observed. Contains some calcite.....	2	3
			7. Yellowish brown or dark buff limestone, weathering to very thin layers. Contains fragments of <i>Spirifer</i> sp. (undet.)	3	10
			6. Coarse heavily bedded yellowish limestone	3	

5. Yellow unfossiliferous shaly limestone	1	4
4. Hard, brittle, unfossiliferous grayish limestone	1	6
3. Limestone similar to the above in appearance, but very shaly		10
2. Thickly bedded gray buff limestone..	1	2
1. Heavy yellowish buff to brownish limestone very coarse and apparently unstratified. Porous with large amounts of calcite, and often much broken in portions, unfossiliferous. To bed of creek	3	1

same as those shown at the Bloody Run section and the relative position is the same. In Charles City the mud-crack horizon may be found in places below great beds of the stromatoporoids and beneath the water level of the Cedar river. At Cedar Rapids, in Linn county, the writer observed what was taken to be a continuation of this horizon though he can make only a provisional statement that it occurs there. Mr. Webster considers that this horizon extends even to the south of Cedar Rapids.

The most satisfactory localities for the study of this horizon are the two Bloody Run quarries. The bed in these quarries has been exposed for a long

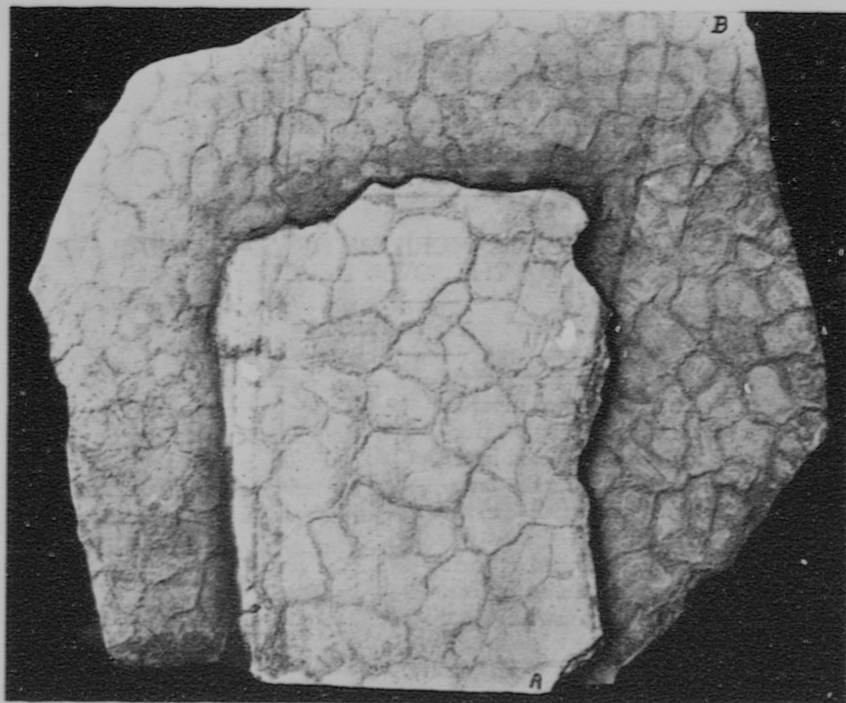


Fig. 1. A and B—Mud-crack; the smaller specimen (A) shows the first type; the larger one (B) shows that of the second. Specimens in collection of Carroll Lane Fenton.

Bed number 12 of this section has the widest extension of any mud-crack horizon of the Iowa Devonian known to the writer. It is found at various points east of Charles City, at Devonia, in the north part of Floyd county, at and near Osage and Mitchell in Mitchell county, and in other localities in the northern portion of Floyd as well as in portions of Cerro Gordo and Worth counties (C. L. Webster). At Waterloo, in Blackhawk county, it is a continuous horizon, and south of the State Teachers' College at Cedar Falls it is also well developed and has a good exposure on the bank of a small creek. The characters at these localities are practically the

term of years and the underlying rocks have so broken away that large specimens can be secured with comparative ease. The horizon at this point consists of two quite distinct divisions. The lower of these is of extremely thin bedded shale. The polygons are of large size from two to six inches at greatest diameter and the interspaces are often one-fourth to one-half an inch wide (fig. 1, A). The edges of the polygons are often very decidedly downward warped and in the specimen figured this characteristic is well developed.

The second type (fig. 1, B) is one of smaller polygons of more regular form with the greatest

diameter ranging from three-fourths of an inch to two inches. The bedding is somewhat heavier and occasionally the stone bears a trace of ripple mark. The surfaces of the polygons are as a rule nearly flat; the down warp is apparent in only the larger of them.

The figure shows two specimens of mud-crack from this bed. The smaller (fig. 1, A) is of the first type; the larger (fig. 1, B) of the second. Both are from the same large slab.

Using the experiments of Dr. E. M. Kindle,* in his study of the formation of mud cracks, as a basis for his deductions the writer concludes that at the beginning of the period during which these cracks were formed the water was of a higher degree of salinity than that of ordinary sea water. The larger

cracks of the lower portions of the beds show that at first the process of desiccation was more rapid than it was during the time when the upper portion of the horizon was laid down. The conditions affecting desiccation, however, were not entirely stable for layers immediately above the large specimen figured contain cracks that average a larger size. The conditions as a whole, however, were fairly uniform and the changes were gradual. The mud was probably of a marly character.

It is impossible of course to make a definite statement as to the cause and conditions of formation of this horizon. The sea bottom was evidently raised over a wide area. The change from normal sea bottom to a wide partially submerged flat was of a temporary character.

NOTES AND OBSERVATIONS.

EQUISETUM ROBUSTUM A. BR. IN ONTARIO.—During the month of November, 1918, a specimen of Horsetail was sent in for identification by Mr. F. J. Perkins, Hope Farm, Kingston, Ontario, which proved to be the above species. Mr. Perkins states that he found it in a wooded lot close to his own grounds.

This species, although known from British Columbia, does not appear to have been found elsewhere in Canada. Dodge's Flora of Point Pelee mentions it as occurring on the small islands near the Ohio shore; it has also been found in the State of New York, which is apparently its northern limit in the east.

J. ADAMS, Division of Botany,
Exp. Farms, Ottawa.

ERRATA.—THE GENUS VESPA IN CANADA. In the typing of my original manuscript of the article which appeared in the October issue of THE OTTAWA NATURALIST, an important couplet relating to the species *consobrina* was omitted. The following corrections should be made:

Page 71, column 2, line 11; for "stipes" read "stripes"; line 18, insert "7" before "hairs."

Page 72, column 1, under "RUFIA GROUP" insert the following: "9. Markings white. Male 2068, female 2067. *consobrina*, Ont. to B.C. Sauss. Markings yellow . . . 10."

Page 72, column 1, line 7, for "9" read "10"; line 23, for "10" read "11"; line 24, for "10" read

"11"; column 2, line 20, for "11" read "12"; line 21, for "11" read "12." F. W. L. SLADEN.

CHIPMONKS: WITH SPECIAL REFERENCE TO THEIR INDIVIDUAL DISPOSITION, CHEEK CAPACITY, AND HANGING ABILITY.—We have two chipmonks at our house, chipmonks which were born on the Fraser plateau of the southern interior of British Columbia, and which were caught in a figure four trap, and transported to a prison camp in Ottawa. Not so much a prison camp after all, as when let out they sometimes go back into the cage to store their gleanings of food. At other times they run over or under us, apparently without the slightest fear, rather than be driven towards the cage. They can stuff seven large kernels of corn in their mouths and hold them in their cheeks.

One of them often watches us, comes to the front of the cage when we approach, eats out of our hand and at times even sits on it when eating. We call him Labor, because he does all the work and loses most of his pay. Some scientists would call him *Labor hustleus*, variety *goodwillie*. The other sulks in a corner, never comes to meet us, seldom eats out of our hand, and always attacks Labor as soon as he has any tidbit. He often takes it away from him. We commonly call him Capital, although known to science as *Capital greedius*, variety *autocratus*.

One morning Labor took a fragment of nut meat from my hand and was fiercely attacked by Capital. He fled to the top of the cage as usual. This is made of wire netting. There he hung by his four feet watching lazy Capital switching his tail in anger, too lazy to pursue him further. Then in order to hold the nut meat with his forepaws, he let go his hold with them and hung free by his hind

*Some factors affecting the development of mud cracks, Journ. Geol. vol. 25, 1917, pp. 135-144.

paws from the top of the cage. Here he hung for some minutes until he had finished his breakfast.

HARLAN I. SMITH.

BIRDS OBSERVED AT THE MAGDALEN ISLANDS IN MONTH OF JULY.—This list was made from memory after leaving the islands, so that other kinds may have been seen which are not mentioned. I was not engaged at anything ornithological at the time, and merely afterwards jotted down the names of the birds I remembered having seen.

AMERICAN ROBIN (*Planesticus migratoria*) may be seen at any time during the summer.

BARN SWALLOW (*Hirundo erythrogaster*). This bird is in evidence at its nesting time, when numbers are to be seen flying in and out of their nests which are built of mud placed against the eaves of barns and other outbuildings.

HOUSE SPARROW (*Passer domesticus*). This European intruder had just made its appearance at the islands, and was then already beginning to make its presence felt.

AMERICAN CROW (*Corvus brachyrhynchus*). Plentiful in the wooded parts of the islands and in the fields.

HORNED LARK (*Otocoris alpestris*). Very common in July in open fields where the bird builds its nest right on the ground where frequently cows are grazing. In the latter part of July the nesting was apparently about over, but although I could not find the nest with the eggs, I caught a fledgling in the open space where it was just learning to fly.

BELTED KINGFISHER (*Ceryle alcyon*). A single specimen of this bird was seen at Havre Aubert, Alright Island, which was alleged to have had a nest in an excavation in one of the cliffs, but I did not see its mate.

HUDSONIAN CURLEW (*Numenius hudsonicus*). Occasionally to be seen along the shores.

GANNET (*Sula bassana*). The distribution of this bird in the Maritime Provinces is very local, but it is very plentiful at the Magdalens where it is often to be seen resting on the bosom of the sea or on the wing.

PETREL. (Sp.?) This bird otherwise known by the name of Mother-Carey's-Chicken is in evidence during stormy weather when it may be seen flying over the crests of boisterous waves. Two individuals were seen by me during a storm when about two miles off shore from Old Harry, Coffin Island.

COMMON TERN (*Sterna hirunda*). May be seen in the summer time flying over the sea at the islands at any time.

HERRING GULL (*Larus argentatus*). One of the most common of birds at the islands, to be seen either on the sea or on the land near the shore.

This gull frequents the maritime coasts throughout the year.

MURRE (*Uria troile*). Frequently seen either on the sea or on the wing.

BLACK GUILLEMOT (*Cephus grylle*). This species is popularly known as the Sea Pigeon and is quite common.

ANDREW HALKETT.

AN ETHNOLOGICAL NOTE ON THE "WHISKEY JACK."—The term "whiskey-jack", locally applied in Canada to the Canada Jay, looks for all the world like a genuine English word. Ingenious theories might be spun as to the origin and applicability of the term. Such theories, however, would be little more profitable than the well-known bit of folk etymology that explains the asparagus plant as "sparrow grass". As a matter of fact, "whiskey-jack" is merely the perverted English form of an Indian original.

In his "Myths and Folk-Lore of the Timiskaming Algonquin and Timagami Ojibwa",* F. G. Speck states that "the trickster-transformer Wiskedjak 'meat-bird' is the personified Canada Jay or 'Whiskey-Jack'." He proceeds (pp. 2-16) to give a number of Timiskaming Algonquin tales dealing with this well-known Indian character. The name Wiskedjak occurs in other forms in closely related Algonquin tribes of Canada. In his "Notes on the Eastern Cree and Northern Saulteaux",** Alanson Skinner gives further tales referring to the same mythological character. The Northern Saulteaux form is given by him as Wisekejack, the Eastern Cree form as Wisagatchak. Further, we find Wisagatchak stories of the Cree included by Frank Russel in his "Explorations in the Far North."† The Algonquin and Northern Saulteaux are to all intents and purposes bands of the Ojibwa, who have travelled north and come into contact with their present neighbors the Cree. The main body of Ojibwa tribes are not acquainted with Wisagatchak, so that it is a fair inference that he is, to begin with, a Cree culture-hero and trickster and that many of the tales told of him travelled to various other Algonkian tribes that neighbored the Cree. It is not at all certain, however, that he originally had anything to do with the Canada jay, as he does not seem to be so identified in all of the tribes, nor does the word itself indicate the jay. Evidently related to Wisagatchak is the Fox culture-hero and trickster Wisahkâ.†† The Fox Indians are now

*Geological Survey of Canada, Memoir 71, Anthropological Series No. 3, 1915, p. 1.

**Anthropological Papers of the American Museum of Natural History, vol. 3, 1911, pp. 83-88 and 173-175.

†University of Iowa, 1898; see "Myths of the Wood Creees," pp. 201-216.

††See William Jones' "Fox Texts," Publications of the American Ethnological Society, vol. 1, 1907, pp. 329-379.

located in Iowa, but originally dwelt along the west shore of Lake Michigan. That the Ojibwa, who occupy territory between the Cree and the Fox, should originally have lacked this character in their mythology is somewhat surprising, but is corroborated by the linguistic evidence, which indicates that the Fox language is more closely related to the Cree than is the geographically less remote Ojibwa. The English term was evidently derived from some Algonkian tribe, in all likelihood an Algonquin or Sauleaux band, among whom the identification of the culture-hero with the Canada jay was current.

The meaning of the term Wisagatchak seems to be doubtful. In his "Dictionnaire de la Langue des Cris," † Father A. Lacombe does not attempt to give any etymology for Wisakketjāk, but merely defines the term as 'legendary man of the various tribes of the North, to whom they attribute supernatural power with a great number of tricks, turns,

and follies. He is regarded as the principal genius and as the founder of these peoples." What has happened, then, in brief, is that an Indian term of obscure meaning, employed to refer to an important mythological being, was, in a limited area, identified with the Canada jay and that this term was then borrowed by the whites as the common name of the jay and finally refashioned into a make-believe English word.

Curiously analogous is the history of the French word *renard* "fox". This word is not of native Romance stock but is merely a French application of the favorite mediæval trickster Reynard, identified in folk-lore with the fox. The term itself is of Germanic origin and appears in many different forms. Among them are the modern German name Reinhart, and the Dutch and Flemish Reinecke or Reinke.

E. SAPIR.

BOOK NOTICES.

LESSONS ON WEEDS. Manitoba Farmers' Library, Extension Bulletin No. 30. Thirty "Extension Bulletins" have already been issued by the Manitoba Department of Agriculture under the general title of 'The Manitoba Farmers' Library' which is devoted to the extension of information on agricultural and sanitary matters and is distributed free among the people of Manitoba. These bulletins cover a wide field and several of them are of special interest and value to field-naturalists, notably No. 23, "Our Friends the Birds," No. 25, "Gophers and Squirrels in Manitoba," and No. 30, the most recently published, "Lessons on Weeds," a pamphlet of 50 pages and many illustrations. All three of the bulletins mentioned above were prepared for use in the schools of Manitoba but are distributed free to farmers as well. Some fifty species of weeds are described and figured, the descriptions including in most instances notes on the mode of reproduction and very full instructions on the best methods of eradication. Seven poisonous plants are described, including the poison ivy, and it is worthy to note that the only method of eradication mentioned is to "put on gloves and pull up the long woody perennial roots which creep for yards underneath the leaves." Perhaps the sentences of most value in No. 30 are these:

"Weeds waste water."

"A big weed takes a barrel of water out of the soil."

One has only to realize this and note the rank growth of weeds which so frequently overrun gardens to understand why in dry seasons so many amateurs are disappointed in their garden crops. A crop of weeds means a barrel of water per square yard, or 8½ inches of rainfall. Other provinces might well follow the example of Manitoba in the publication of such bulletins as "Lessons on Weeds" for use in the public schools.

THE HAWKS OF THE CANADIAN PRAIRIE PROVINCES IN THEIR RELATION TO AGRICULTURE. By P. A. Taverner. Museum Bulletin No. 28. Dept. of Mines, Canada, August, 1918. The work before us is one that has long been needed and comes at a time when its authority may prove an important factor in the preservation from extinction of some of our most useful birds. To the reviewer, who has spent much time and labor in an endeavor to show the absurdity of the indiscriminate slaughter of our prairie hawks, this publication is extremely welcome.

As Mr. Taverner points out, we have few really injurious hawks inhabiting the Prairie Provinces and of these but one, the Goshawk, is of sufficient size, or occurs in sufficient numbers, to be of marked importance in reducing our game supply. This hawk breeds but rarely in the southern portions of Western Canada, but when the food supply is scarce in the north invades our territory in considerable numbers during autumn and winter time.

†Montreal, 1874.

More than one such invasion has taken place within the last 30 years, and on each occasion there has been a very marked reduction in the number of grouse. This is, of course, not to be wondered at when we realize that a single Goshawk has been known to practically destroy a flock of 50 sharp-tailed grouse during the winter. It is noteworthy that these hawks seldom raid poultry yards and in consequence are difficult to entice within range of a gun, but to those who have had experience, a flock of pigeons have proved to be a useful attraction to lure the Goshawks within range.

It is quite impossible to touch upon all the questions this publication introduces with which in nearly every case, the reviewer is in full accord. It might seem, perhaps, that undue value is attached to the Marsh Hawk which in Manitoba is rather a frequent visitor of poultry runs and moreover, in its juvenile state, when first learning to hunt for itself, destroys many immature grouse. As an adult, however, there is no question of its great value to agriculture.

It is to the buzzards, however, such as the Red-tail, Swainsons and Rough-legged Hawks that we owe our greatest debt. These are truly Gopher hawks and since they apparently kill more than they can eat it is probable that their value far exceeds the conservative estimate placed upon them by Mr. Taverner even though in the case of Swainsons Hawk there are instances of poultry and wild birds having been taken.

As Mr. Taverner remarks, the eagles are rare. They are liable to become still more so owing to the mania for collecting them at every opportunity. So far as their food is concerned, this is made up largely of bush and jack rabbits.

This bulletin is an excellent one carefully prepared and provided with several useful text figures as well as three colored plates showing most of the hawks discussed in different phases of plumage. It should be in the hands of every prairie farmer or sportsman and if carefully read should do much to dispel the prejudices which have been so widespread and which have indirectly been a far greater factor in reducing our crops than is generally supposed.

N. C.

DRAGONFLIES (ODONATA) OF ALBERTA. By F. C. Whitehouse, with two plates of illustrations. This pamphlet of 16 pages, published by the Alberta Natural History Society is a valuable contribution to the entomology of the province. 55 species are listed and a brief description of each given. A key to seasonal distribution is included, also a key to the genera.

TENTH ANNUAL REPORT OF THE QUEBEC SOCIETY FOR THE PROTECTION OF PLANTS FROM INSECTS AND FUNGUS DISEASES, 1917-1918. This report of 92 pages has recently come to hand. It contains a number of papers of value particularly to the horticulturist or agriculturist, such as "The White Pine Blister Rust in Quebec," by Henri Roy; "Warbles and Bots," by A. E. Cameron; "Ants and Aphids," by Father P. Fontanel, etc. The report is published as a supplement to the report of the Quebec Department of Agriculture.

A. G.

OBITUARY.

ERNEST DOUGLAS WINTLE.

Ernest Douglas Wintle was born at Gloucester, England, June 29th, 1852, and died at Montreal, Que., July 19, 1917, at the age of 65.

In a letter from his sister, we learn that "he was always a lover of natural history", and coming to Canada over forty years ago he kept up his interest developing a good field knowledge in natural history subjects generally, but gradually focusing his attention on birds, and after nearly twenty years' close attention to the subject published his "Birds of Montreal" in 1896; a book that is still our only reliable guide to the birds of that region. Previous to this, Mr. Wintle published several articles on Ornithology in the *Auk* and other journals, but

ceased to do active work in this field after publishing his book, though his interest in Ornithology never waned, as is shown by his private correspondence. Mr. Wintle was at one time a member of the Ottawa Field-Naturalists' Club, the Natural History Society of Montreal, the Entomological Society of Ontario, an associate member of the American Ornithologists Union, and one of the advisory council of *Bird Lore*. Mr. Wintle was buried in Mount Royal Cemetery, Montreal.

I am indebted to Mr. H. Mousley, of Hatley, Quebec, for permission to use information contained in letters written to him by friends and relations of the late Mr. Wintle.

J. H. F.