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FORMATIONS, FAULTS AND FOLDS OF THE OTTAWA DISTRICT.*

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With the exception of the remarks on the geology of the Ottawa area, contained in the "Geology of Canada," 1863, but little attention has been paid, in any of the official publications of the Geological Survey to the study of the rock formations in the vicinity of this city. This has been in large part due to the fact that the work of the different members of the field staff has lain, for the most part, in districts more remote. The local geology and palæontology have however been described in some detail by several members of this Club, more especially by Dr. Ami, Mr. T. W. E. Sowter, Mr. Walter R. Billings, and others, who have contributed papers from time to time in the Transactions, so that we have a very fair general knowledge of the formations about our city. There is however a large field for collectors at our very doors, and the object of this paper is more particularly to direct attention to the distribution of the several geological formations in our more immediate vicinity, as well as to indicate some points of structure, in connection with certain faults and folds, which occur in close proximity to Ottawa, as well as in the city itself. These have not hitherto been prominently referred to, but they have served to complicate very considerably the geological relations of the several formations of the Palæozoic series.

*Read before the Ottawa Field-Naturalists' Club, Tuesday, Jan. 4th, 1898.

The geological structure of this area is confined almost entirely to the Cambro-Silurian formations. To the north of Hull, the old rocks of the Archæan approach within a short distance of that city, while to the west of Ottawa, in the eastern portion of the township of March and in that part of Nepean adjoining on the east, similar granites, gneisses and limestones are well displayed in a somewhat prominent ridge which extends eastward from Arnprior. Resting upon these are the nearly horizontal strata of the Potsdam sandstone and the Calciferous limestone in their regular order, and in places these graduate upward regularly into the Chazy and the succeeding formations, to the top of the Cambro-Silurian series, which is capped by the soft red shales of the Medina, in the adjacent township of Russell.

Much of the rock structure of Ottawa city is concealed at the present time, and only occasional outcrops are visible at widely separated intervals. Much information concerning these hidden portions has been obtained, principally by Dr. Ami, from an examination of the excavations made for drainage and for buildings, and in this way we have been enabled to obtain a fairly comprehensive idea of the geological structure of the whole city.

The oldest of the Palæozoic formations, near Ottawa, are the Potsdam sandstone and the Calciferous limestone, there being no break between these two series of strata. These can be well observed in the vicinity of Templeton station on the Canadian Pacific railway, where the Potsdam sandstone rests directly upon the Archæan gneiss and limestone and forms an escarpment about thirty feet in height. These sandstones shade upward into the Calciferous strata, which are well exposed in the village of Templeton and along the road to the crossing of the Wabassee Creek. These are the only Palæozoic formations seen in this part of the section. To the west of the city, in the

western part of March, and in that part of Nepean adjoining, the same succession of the Potsdam and Calciferous can be observed ; but here there is an upward passage into the Chazy and thence into the overlying formations. The greenish-grey shales of the Chazy can be seen all about the village of Britannia, from which place they extend eastward along the shore of the Ottawa to the vicinity of the old burned mill at Skcad's. Along the Rideau River, at Black Rapids and thence south to Smith's Falls, the Calciferous limestone is the prevailing rock, and this occupies a great portion of the townships of Osgoode and Nepean.

The Chazy does not appear in the city itself, west of the park at Rockliffe ; but to the west of Hintonburg, going along the south shore of the river, the limestones of the formation come into view from beneath the Black River, about half a mile west of the Little Chaudiere rapids, in rear of Mechanicsville. The Chazy shales first appear at the cove above the old Skead mill, and thence they extend westward, as already noted, to Britannia and for some distance beyond to the contact with the underlying Calciferous. They are well exposed on the road to Bell's Corners, near the crossing of the Ottawa and Parry Sound railway, where they also rest upon the Calciferous in regular order. Characteristic Chazy shales with bands of limestone are also seen at the Hog's Back on the Rideau, but the outcrop, although conspicuous at this place, is limited, and a fault to the south, along the shore, brings in the Black River and Trenton, and cuts out the upper or limestone portion of the Chazy proper. About a mile above the Hog's Back, Chazy strata again appear on the east bank of the Rideau, but a short distance further south these are in contact with the Calciferous by a fault which is conspicuous along the road up the east side of the cañal, where the strata are tilted at a high angle

The portion of the Ottawa from a point a couple of miles above Britannia to about one mile east of Berry's Wharf, shows

outcrops of the Calciferous limestone, and these at the latter place pass upward into the basal beds of the Chazy, which here consist of coarse greenish grits and fine conglomerates. The Chazy strata thence extend along the south shore of the Ottawa to the mouth of the Mississippi at Fitzroy Harbor, where they again rest upon the Calciferous limestone. The Chazy limestones are well seen in a part of this section, coming in on the hill to the south of Berry's Wharf, and also along the shore several miles west of this place, whence they extend to the western line of Torbolton. On the north side of the river the shales are exposed at the village of Quyon, resting upon the Calciferous which forms a narrow fringe along that part of the river. Nearer the city the shales are visible at Aylmer and along the north shore as far west as the cove near Breckenridge station on the Pontiac and Pacific railway; a small selvage of the Calciferous limestone occupying the shore below high-water mark, in the upper part of this distance. East of Aylmer the shales extend to a point about two miles east of Conroy's Mills at Du Chene. They are also well seen along the line of the Electric railway till they are overlapped by the Chazy limestones west of Tetreauville. They do not appear along the north side of the Ottawa below this point with the exception of a very small outcrop along the road in Tetreauville near the fault between the Trenton and the Black River.

East of the city the Chazy comes prominently into view a short distance west of the Gatineau Ferry landing at Rockcliffe. The contact between the Chazy shales and the Trenton limestones is indicated by a fault of considerable extent which is about ten chains west of the ferry landing, the nodular limestones of the Trenton there coming to the surface. Limestones, apparently all of Trenton age thence occupy the shore to the western side of the point below the upper ferry wharf, where they are in contact, also by a fault, with the Trenton limestones of New

Edinburgh and the Chazy and Black River limestones are apparently absent. East of Rockliffe, the Chazy shales extend to Beechwood, and thence continue along the south side of the Ottawa for some miles, appearing occasionally as far east as Point Fortune. At the South Nation River they are overlain, one mile south of the Ottawa, by the limestones of Black River age. The contact of these formations can also be well seen at Besserer's, Rockland, Cumberland and at several other places in this direction. A very small outcrop of the Chazy is also seen on the north-east angle of Fairy Lake, which is at the head of the Beaver meadow and about one mile north of Hull. This exposure is limited and the rocks which are shaly, are cut off by a well defined line of fault, separating them from the Black River formation. No other true Chazy rocks were observed to the east of the city of Ottawa.

The Black River and Trenton formations which come next in order, are well developed in the vicinity of Ottawa, but are very considerably affected by faults in this district. The outcrops of the former are not very numerous or extensive as compared with some of the others, but the formation is found at a number of points and is always characterized by its peculiar fossils, especially as regards corals. To the west of Ottawa, the Black River is seen at the Hog's Back and at the Experimental farm, near the Director's house. The limestones extend north to the Ottawa River at the foot of the Little Chaudiere rapid, whence they cross the river and appear in the village of Tctreauville. At all these places the Black River is separated by a fault from the limestones of the Trenton. The outcrop of the formation at Fairy Lake has already been referred to. The area at this place is small and there are two faults, one of which affects the Black River and the Chazy, while the other separates the Black River from the Trenton. A line drawn from the Hog's Back to the head of Fairy Lake, with a course of north twenty degrees

west, will cut all the points at which the line of fault between the Black River and Trenton are seen, though there are several minor breaks clearly visible at a number of places intermediate between the two extremities of this line. This fault is particularly well exposed at Tetreauville, along the railway and on the shore; at Mechanicsville, at the west side of the deep cove, and on several of the roads in this village; along the line of the Ottawa and Parry Sound railway, and at the Hog's Back. South of the Richmond road, near Skead's Mill, Black River limestones are also exposed to the line of the railway and these beds appear to pass beneath the escarpment of Trenton which occupies the area between that road and City View post office.

To the east of the city the beds of the Black River are seen at the entrance of Beechwood cemetery, overlaid by the Trenton on the south and east of this. In the direction of Green's Creek, this formation keeps to the north of the Montreal road in the vicinity of Robillard's quarries which are in the overlying Trenton. From this place it can easily be followed in escarpments and broad ledges to the crossing of the South Nation River, being well observed at Rockland and Clarence Creek about three miles south of the Ottawa. In this direction also almost continuous exposures are seen along the road between ranges II and III, Gloucester, for several miles, or nearly to the eastern line of Carleton county. The characteristic corals of the formation can be obtained in abundance at all these places. They are also well seen to the south of the village of Cumberland and form broad, nearly flat lying, ledges for a long distance.

West of the fault in Mechanicsville the limestones of the Black River are also well exposed along the line of the Canadian Pacific railway as far west as Skead's Mill corner, where the formation passes down into the Chazy.

The Trenton formation is probably the most widely distributed in the city of Ottawa and vicinity. It is also well de-

veloped in the neighboring city of Hull, all the quarries at this place being in the Trenton limestone while the characteristic cliffs about Ottawa are very conspicuous geological features.

In the eastern portion of the city, though rarely appearing at the surface, it is known to underlie the greater part of lower town, situated to the south of the canal and extending south almost to the head of the Deep Cut, and east as far as Chapel street, whence the limit of the formation crosses the Rideau about the east end of the railway bridge in the western part of New Edinborough. In Centre town the limestones occupy the hill on which the Parliament buildings are placed as far south as Wellington street where they are met by the overlap of the Utica shales, whence, from the corner of Bank street, the outline of the formation takes the form of a curve, the western line of which is a short distance west of Lyon, on Lisgar street. The line of the formation then curves eastward and reaches Bank street again near the Canada Atlantic tracks, whence, crossing the Bank street road, it follows a flat curve and returns to the west of the road again, a short distance to the north of the Rideau near Billing's Bridge. It then keeps close to the line of the canal as far as the enlargement or pond at Dow's Swamp, when the outline strikes south along the course of the Ottawa and Prescott railway, and the contact with the Utica is seen about half a mile west of what was formerly known as Chaudiere Junction. The limestones are also well exposed in quarries and outcrops to the south of Hog's Back and along the road up the south side of the river for several hundred yards, where they are underlain by the Black River formation. To the east of this outline the country is mostly occupied by the dark bituminous shales of the Utica, which gradually pass upward into the overlying Lorraine formation, with its grey shales and sandy beds. A broad plateau of the Trenton is also seen about City View post office and to the north, resting upon the Black River

which occupies much of the country thence to the Ottawa

In the western portion of the city proper, the Trenton is well developed at many points. It constitutes the bold escarpment at the west of Maria and Lisgar streets, and can be seen in the cuttings along the line of the Ottawa and Parry Sound railway in the direction of Hintonburg. Good outcrops are exposed along the east side of the canal expansion on the road to the Experimental Farm as also to the west of that depression on the portion of the farm east of the fault which separates the Trenton from the Black River. Along the line of the Parry Sound railway a number of cuttings are seen in which the relations of the Trenton to the Black River can be well studied, and several instances of faulting are apparent. Some of these disturbances are in the beds of the Trenton entirely, while others affect the two formations. The strata at the contact dip at a high angle, or from fifty to seventy degrees, with a course of twenty to thirty north of west, magnetic. This is the same direction as noted in Tetreauville on the north side of the Ottawa, as also at Fairy Lake, where the contact of the two formations is similar, several faults being visible at both these places.

To the north of Hull on the road to Chelsea, the Trenton beds appear to overlap the other formations and the underlying strata are not exposed in this section, though this may be due to the great deposits of clay which cover so large an area west of the Gatineau. East of this river, where the continuation of this formation might naturally be looked for, the surface is also clay-covered for miles, but the outcrops which occasionally appear at no great distance back from the Ottawa are of gneiss, while at the mouth of the Wabasee Creek, three miles east of Gatineau Point, the Calciferous and Potsdam come to the shore of the river from the vicinity of Templeton station. There is apparently a line of fault in the direction of the lower Gatineau which separates the rocks of these two formations from the

prevailing Trenton beds which appear near the west side of that stream.

South and east of Ottawa the Trenton strata are again seen on the Montreal road at Robillard's quarries. They first appear on this road a short distance east of the road from the shore, between lots 24 and 25, where they are in contact with the Utica shales which extend south from Janeville. The contact is also well seen on the road which comes to the Montreal road along the east side of the Catholic cemetery, about two hundred yards north of the latter. These Trenton rocks thence extend eastward in the direction of Navan, overlying the Black River formation which is well exposed in large flat lying ledges along the second road north of the Ottawa in Gloucester, and already referred to. The contact of the Trenton with the Utica in this direction is about thirty chains north of the corner at Navan.

The Utica shales come in their proper place upon the Trenton in New Edinborough and thence westward they occupy the southern portion of the city past Billing's Bridge, sweeping south, however, near the east end of Dow's swamp but with a basin shaped area extending northward in the depression partly occupied by the pond in the direction of Cedar street. A limited area also occurs to the west of the canal, east of the pond which is apparently faulted in with the Trenton of this area. From the Pond the southern trend of the basin carries the west line of the Utica several hundred yards south of the Hog's Back, and brings it in contact with the Black River about half a mile west of the junction of the railway from New Edinborough with that from the Canadian Pacific station leading to Prescott. The southern edge of the Utica, to the south east of this place, meets the Calciferous by a line of fault which crosses the Rideau about two miles south of the Hog's Back, and this fault can be easily recognized on the Gloucester road about lot 18, range V, of Gloucester. From this place it can be seen at intervals to the east for some miles.

The Utica in this direction appears to constitute a continuous basin for more than fifty miles which apparently extends to within a short distance of Vankleek Hill, occupying the valley of the South Nation for some distance and being underlain by the Trenton limestones which thence continue northward in the direction of the Ottawa. The width of the Utica shales in some portion of this area is not far from twelve miles and they are in turn overlain by the Lorraine shales and sandy beds, which in turn pass upward into the soft red-shales of the Medina, so conspicuous in the townships of Osgoode and Russell and in the south-west part of Cumberland. Several minor undulations affect the strata of the several formations in this part of the district, but none of these have apparently resulted in greatly disturbing the beds, with the exception of the great fault between the Calciferous and the Utica. There are other faults visible in the northern portion of the Palæozoic basin, notably to the south of L'Original, where there is a break between the Chazy and the Black River or Trenton but this cannot be of great magnitude since both these formations are comparatively thin.

The foregoing will pretty well represent the distribution of the principal rock formations in the immediate vicinity of Ottawa, and in the extension of the basin to the east and west for some miles. It may be remarked that they are all readily recognized by their characteristic fossils, and large collections have been made from time to time, from many localities, both by the officers of the Geological Survey as also by several observers who are interested in the study of the geology of the district.

No attempt will be made in this paper to describe the glacial and post-glacial deposits of the area. These have already been discussed at some length by different members of the club, and large lists of the marine fauna, so abundant in the clays and gravels, have been published in the Club's Transactions.

The principal folds which affect the strata near Ottawa can be readily recognized. They occur both to the east and west of the city. Near Rochester street, on the line of the Canada Atlantic railway, one of these is seen to the north of the track, which disturbs the regular dip of the limestone to some extent but affects only the strata of the Trenton, as these limestones continue west as far as the road south from Hintonburg. On the line of the Ottawa and Parry Sound railway, however, a short distance west of this road, there are several breaks in the strata, the dips increasing suddenly from five to sixty degrees. The first of these affects merely the Trenton limestones, but a second disturbance, a few yards further west, is more pronounced and brings the Trenton abruptly against the Black River limestones. The vertical extent of this fault cannot however be very great. It is however, of interest, from the fact that it can be traced for some miles both to the north and south. Thus if prolonged on a course of south twenty degrees east, magnetic, it will reach the faulted area at the Hog's Back, where however, several other breaks are seen, while on the other hand if traced northward, it can be recognized in the several streets of Hintonburg, and Mechanicsville, from which it can be followed across the Ottawa, through Tetreauville and out to Fairy Lake, the line connecting all these points being quite straight. At all these points the Trenton is brought into contact with the Black River. At Tetreauville, several other minor faults can be easily seen in the area between the Aylmer road and the river, some of which affect the Trenton beds only, as is the case with the disturbance along the post road into Hull at the pitch of the hill near Tetreauville. This disturbance can also be seen on the line of the Electric railway near the junction of the tracks to south of this village.

The portion of the Ottawa River between the foot of the Little Chaudiere rapids and the railway bridge shows a considerable breadth of disturbed strata. The broken character of the Trenton beds in this direction can be readily recognized among

the numerous islets which here occupy the channel, and this line of disturbance continues through the western portion of Hull. Along the Creek in the Beaver meadow, north of this place, a number of outcrops of Trenton limestone appear which are tilted at a moderately high angle, and this line of disturbance continues to the head of the Fairy Lake, where several faults are evident. Thus, on the east side of the lake, strata of the Chazy shales, the Black River limestones and the Trenton can all be seen, while on the west side, descending the escarpment, not far from the south-west angle of the lake, tilted beds of Trenton are again exposed. These rest upon the Black River beds which can be followed thence to Tétreauville.

Along the river in front of the city, several small faults can be observed. One of these is to the west of the bluff on which the Parliament Buildings are placed, but this affects the beds of the Trenton only. At the end of Nepean point also, there is a small local area of disturbance in the usually horizontal strata of this place, but the displacement is apparently only slight. The faulted character of the beds between New Edinburgh and Rockcliffe where the disturbances affect the Chazy and the Trenton has already been referred to.

In the area to the south of Clarkstown, near the entrance to Beechwood cemetery, a well defined fault can be seen near the angle of the road opposite the greenhouse. This fault brings the Utica shales against the Chazy, and is probably one of the most extensive in the Ottawa basin, as the Trenton and Black River formations have both disappeared.

One of the most interesting places at which one may readily study the Palæozoic formations of this district and also within easy reach of the city, is at the village of Rockland, about thirty miles down the river. At this place the whole series from the Laurentian to the Trenton can be well seen within the space of a couple of miles. The Archæan shews in a small outcrop in the vicinity of the steam mills near the wharf, and is there covered over by the basal or arkose beds of the Potsdam sandstone.

These pass upward in a few feet into the quartzose strata of that formation which form a well outlined escarpment nearly forty feet in height, and these in turn are succeeded upward by the calcareous portion of the Calciferous which forms another escarpment. The Calciferous limestones occupy the greater part of the village of Rockland and can be well seen along the main road through this place. This formation is covered by the Chazy shales in the flat area to the south, in the direction of the Stewart quarries. The Chazy limestones are not so well seen at this point, but the base of the steep escarpment, about one mile south of the Ottawa, is occupied by the limestones of the Black River while the Trenton beds occupy the upper portion of the same escarpment. In this way we can very readily study the peculiar features of the several formations and with very little unnecessary travelling. A paper on the geology of a part of this district was read several years ago by Dr. Ami and the relations of the Black River and Trenton were pointed out.

In the present paper it has been possible to state, in the briefest manner only, the principal points of interest in the district under consideration. It will however serve, possibly, to call the attention of those interested in the geology and palaeontology of the area to a number of places in our immediate neighborhood, and in this way may be of some practical benefit. There are many localities in the vicinity of Ottawa and Aylmer which will yield a rich harvest to the diligent collector, if the work is systematically done, as the study of the fauna in the strata of this vicinity, has been by no means exhausted.

BRITISH ASSOCIATION FOR THE ADVANCEMENT
OF SCIENCE.

The 67th annual meeting of the British Association for the Advancement of Science has been held in Canada, and as on the occasion of the Association's visit to Montreal, in 1884, has proved a great success. The attendance of members from Great Britain and America was very gratifying. One interesting feature of the gathering was the joint action or co-operation of the American Association for the Advancement of Science, which sent not less than 800 of its members and officers from the Detroit meeting to Toronto. The President of the Association was the distinguished physician Lord Lister, the President-elect, Sir John Evans, K.C.B., For. Sec. Geol. Soc. London.

There were many distinguished men of Science present at this Toronto meeting, and it would be impossible in a brief sketch like this to give a detailed list of all. Lord Kelvin, better known to many as Sir Wm. Thompson or Professor Thompson of Glasgow University, was a conspicuous figure throughout these meetings, and his jovial face coupled with his lucid remarks at all times attracted those who were fortunate enough to listen to him. Prof. Rücker, Prof. Roberts-Austen, Prof. C. LeNcve Foster, Prof. I. C. Miall, Prof. Michael Foster, Prof. Herdman, Prof. Sir Wm. Turner, Prof. R. Meldola, Prof. A. D. Waller, Mr. J. Scott Keltie; the Rt. Hon. James Bryce, M.P. Prof. J. Milne, Dr. H. R. Mill, Mr. A. C. Seward, M.A., Prof. W. T. Blanford, Prof. Lamplough, Prof. H. A. Miers, and a score of other specialists of Europe contributed much by their energies and guidance in the affairs of the British Association meetings to make them both exceedingly useful and practical, exhibiting at all times a most business like character.

Not less than 800 papers on various topics of live scientific interest were presented and read at this meeting. The discussions which followed many of these were of a most interesting nature, and the cosmopolitan character of scientific researches was demonstrated beyond expression: the views of workers in one field of science in Europe were freely

discussed by those engaged carrying on similar researches in North America, or *vice versa*, and the interchange of ideas always brought light with it.

Of foreign or European members and delegates there were :—Prof. Albrecht Penck, Prince Kropotkin, Dr. Dorhn, Mons. C. Richet, Sir George Robertson, Mr. F. C. Selous, Prof. Brauner, Prof. Meslans, Prof. Lloyd Morgan, Prof. Richards, whose interesting papers captivated the attention of all who had the pleasure of listening to them in their respective sections.

The United States of America contributed not a little to the success of these meetings and the papers read were of a high type. Among those who took an active part in the work of the various sections from the United States were :—Prof. W. J. McGee, Prof. G. K. Gilbert, Prof. Simon Newcombe, Dr. A. F. Chamberlin, Dr. W. M. Davis, Dr. R. E. Dodge, Mr. F. B. Taylor, Prof. Mendenhall, Prof. E. W. Claypole, Prof. H. L. Fairchild, Prof. Homer T. Fuller, Prof. F. W. Putnam, Dr. Wm. Osler, Prof. Bailey Willis.

Of Canadians, who read papers in various sections of the British Association, we note the following from our note-book :—Dr. G. M. Dawson, Mr. J. F. Whiteaves, Prof. A. B. Macallum, Dr. A. P. Coleman, Prof. R. Ramsay Wright, Dr. R. W. Ells, Prof. E. E. Prince, Prof. James Mavor, Dr. Wm. Saunders, Prof. D. P. Penhallow, Dr. F. D. Adams, Prof. B. J. Harrington, Prof. H. T. Bovey, Prof. L. W. Bailey, Messrs. J. B. Tyrrell, A. E. Barlow, James White, W. F. Ferrier ; Professor J. Fowler, and Drs. W. W. Andrews, G. T. Kennedy, and J. W. Spencer.

Among the Canadians who occupied prominent positions in the various sections we note :—Dr. G. M. Dawson, President of Section C. Geology ; Prof. A. Johnson, J. C. Glashan, Prof. J. G. MacGregor, in Section A ; Drs. Ellis and Ruttan, Prof. Pike and Prof. Harrington, in Section B, Chemistry ; Prof. Coleman, Secretary of Section C ; Prof. R. Ramsay Wright and Prof. Prince, in Section D, Zoology ; Prof. Burwash, Capt. Deville, Mr. J. B. Tyrrell, in Section E, Geography ; Prof. J. Mavor and Prof. Adam Shortt, in Section F ; Prof. Bovey, Prof. Galbraith, Profs. Callendar and Dupuis in Section G ; Prof. Macallum,

in Section I, Physiology; Prof. Penhallow and Dr. Jeffrey, in Section K, Botany.

Too much praise cannot be given to the very energetic and painstaking General Secretary of the British Association, Prof. Griffith; also to Prof. John Hopkinson, of the General Conference Committee, and to the gentlemen of the Local Committee: Mr. B. E. Walker, Dr. Macallum, Prof. R. R. Wright and Mr. J. S. Willison. It would take too much space to give an exhaustive account of the papers read even by the members of our Club who were present at those meetings, much as we should be disposed to publish abstracts of their papers. These abstracts will appear in the Annual Volume of the Association. A paper of general interest presented before the General Conference Committee of the Association and dealing with "Museums in Canada," was ordered to be printed in extenso and we hope to give a synopsis of the same at a future date.

An outcome of the British Association meeting in Toronto was the appointment of a Committee to investigate and report upon the suitability of a site as a Canadian Biological Station. Cache Lake has been visited and its suitability practically established. The Committee to investigate this matter consisted of Professors E. E. Prince, (Ottawa); Ellis, Toronto; Miall, England; Wright, Toronto; and Dr. G. M. Dawson, Ottawa.

A sum of money has also been placed at the disposal of a Committee, consisting of Sir Wm. Dawson, Prof. A. P. Coleman, Prof. D. P. Penhallow, Mr. G. W. Lamplough, and the writer, to investigate the Pleistocene flora and fauna of Canada.

Various other committees were struck as usual, and grants of money made for specific scientific purposes. H. M. A.

ANNUAL MEETING.

The Annual Meeting of the Ottawa Field-Naturalists' Club for the Election of Officers, reception of reports, and the transaction of other business, will be held on Tuesday, March 15th, at 8 p.m., in the Y. M. C. A. Hall.