MAY, 1909

VOL. XXIII, No. 2

THE OTTAWA NATURALIST

Published by The Ottawa Field-Naturalists' Club.

CONTENTS:

COPELAND-CHATTERSON-CRAIN LIMITED

ISSUED MAY 28, 1909.

Entered at the Ottawa Post Office as second class matter.

STEPHEOCERAS NICOLENSE.

THE OTTAWA NATURALIST

VOL. XXIII. OTTAWA, MAY, 1909 No. 2

DESCRIPTION OF A NEW SPECIES OF AMMONITE, OF THE GENUS STEPHEOCERAS, FROM SOME ROCKS OF PRESUMABLY JURASSIC AGE IN THE NICOLA VALLEY, B. C.*

By J. F. Whiteaves.

The generic name *Stepheoceras* was proposed by Mr. S. S. Buckman, in 1898,† for the Ammonites of the "Humphreysianus-group", which had previously been regarded as the most typical section of Waagen's genus *Stephanoceras*. But, as Mr. Buckman has pointed out, the latter name was "preoccupied ‡ when proposed by Waagen" in 1869, and "must lapse altogether on account of prior use". *Stepheoceras*, as its author is careful to say, is "only an alteration of the name *Stephanoceras*", and perhaps is not altogether free from objection on that account. Still, the genus itself seems to be quite a natural one, and as such is accepted as valid by Hyatt, in 1900, in his revision of the Ammonoidea in the first volume of Eastman's translation of Zittel's Text-book of Palæontology.

The type of *Stepheoceras*, which, so far as known, is an exclusively Jurassic genus, is the *Ammonites Humphreysianus* of Sowerby. In a well preserved specimen of that species, from Dundry, in the Museum of the Geological Survey of Canada, which is five inches and three-eighths in its maximum diameter, there are at least six rounded and slender whorls; the ombilicus is wide and open, exposing a considerable portion of each of the inner whorls, and the surface is marked with straight and transverse ribs, which trifurcate from a tubercle on the middle of each side.

In 1876 Dr. G. M. Dawson made a collection of fossils from

* Communicated by permission of the Director of the Geological Survey of Canada.

† Quarterly Journal of the Geological Society of London, vol. LIV, p. 454.

‡ By Ehrenberg, in 1838, for a genus of Rotifera.

some volcanic rocks of mes ozoic age on the Iltasyouco River and Tigutlat or Tsehouts Lake, in the coast range of British Columbia. These fossils were reported on by the writer in 1878, in the Report of Progress of the Geological Survey for 1876-77, in which the Ammonites were determined by Professor Hyatt. Among them there is an Ammonite from Tigutlat Lake that Hyatt referred to *Stephanoceras Humphreysianum*, and that the writer identified with *Olcostephanus Loganianus* of the Queen Charlotte Islands in 1884, and figured under that name on Plate XXIII, fig. 1, of the first volume of "Mesozoic Fossils" published by the Canadian Survey. It has long been obvious, however, that this Ammonite can no longer be safely identified with either of the species named, and it would now seem that it probably indicates a previously unnamed species of *Stepheoceras*, which it will be convenient to designate as *S. Pluto*. It seems to differ from the typical *O. Loganianus* chiefly in its much wider and more open umbilicus.

On the evidence of specimens recently collected in Alaska, Dr. Stanton regards the two species of Ammonite from the Queen Charlotte Islands which the writer described and figured in the first volume of "Mesozoic Fossils" under the names *Perisphinctes Carlottensis* and *Olcostephanus Loganianus*, as of Jurassic rather than Cretaceous age, and refers them both to *Stephanoceras*, Waagen.* If this view be correct these two species, also, may possibly be referable to *Stepheoceras*, but the sutural line of both is unknown, and their exact generic position is still uncertain.

In August, 1904, Dr. R. W. Ells and Mr. R. A. A. Johnston, of the Geological Survey staff, collected a few specimens of a large Ammonite, which is by far the most typical and distinct species of *Stepheoceras* that has yet been found in Canada, from a small outlier of compact and readily weathering limestone on the side of a mountain about a mile and a half north of a point in the road midway between Nicola and Coutlee, in the Yale district of British Columbia.

These specimens are two casts of the interior of most of the septate portion of the shell, and eight fragments.

The larger of these two casts was originally about eighteen or nineteen inches in its maximum diameter, but a piece of the anterior end of it has been mislaid, and the specimen is now only fourteen inches across.

The smaller cast is about eight inches in its greatest diameter, and has most of the two outer whorls exposed on one side.

Neither of these casts show any evidence of septation, but

* In Bulletin of the Geological Society of America, June, 1905, vol. 16, p. 402.

some of the fragments, which must have formed part of as large specimens as the larger of them, are conspicuously septate.

The eight fragments are pieces of the anterior end of the coil of large casts of the septate portion of the shell, which not only give clear evidence of septation, but also show the outline of a transverse section of the coil, with the emargination caused by the contact furrow on the dorsum.

The species indicated by these specimens may be provisionally named and described as follows:—

STEPHEOCERAS NICOLENSE, SP. NOV.

Shell very large, with rounded whorls, and a wide and open umbilicus. Whorls nearly circular in transverse section anteriorly but concavely emarginate on the dorsum by a well defined longitudinal furrow of contact. They increase rather slowly in thickness, the earlier ones being quite slender, but they ultimately become robust and strongly convex. Their number appears to be about five or six, but only four are visible in the largest specimen known to the writer, the earlier whorls being either not preserved or covered with the matrix.

Umbilicus occupying considerably more than one half of the entire diameter, fully one half of each of the inner whorls being exposed.

Test unknown; surface of the cast everywhere strongly and regularly ribbed, the ribs being straight, transverse, and much narrower than the concave grooves between them. On the outer whorl each rib trifurcates from a low and obscurely defined tubercle on the umbilical margin. As thus divided, the three ribs in each set pass uninterruptedly over the venter, and reunite at a corresponding tubercle on the umbilical margin of the opposite side.

Body chamber, and finer details of the sutural line unknown.

HOW THE ENGLISH SPARROW IS ADAPTING ITSELF TO NEW CONDITIONS OF LIFE.

BY NORMAN CRIDDLE, TREESBANK, MAN.

The English, or House Sparrow, was introduced into the United States in the early fifties of last century and into eastern Canada in 1854. Probably but few colonies were started in the Dominion, but in the United States small lots were liberated in many of the larger cities, both on the coast and inland. As a result of those early introductions, House Sparrows are now to be found in nearly every portion of the continent. It is uncertain when the first individuals invaded Manitoba. They

were certainly rare fifteen years ago, even in the cities, and it is only within very recent times that the country farm buildings have become inhabited by them. The western birds almost surely introduced themselves from the south, as the wide chain of hills to the east would greatly retard a movement from that direction. It is, however, of small importance how the birds arrived; they are here to stay and their injurious habits present us with an excellent example of the danger of introducing animals of questionable value.

The most remarkable attribute of English Sparrows is the way in which they have already become adapted to wide climatical conditions. Heat, cold, wet or dry, has apparently little effect in retarding their increase. This is unquestionably due, in part, to their habit of seeking shelter in buildings from weather extremes, especially cold. There is, however, a limit, as was shown in Manitoba last January during an exceptionally cold spell, when shelter of some sort became absolutely necessary for the preservation of life. Where this was not secured there is no doubt that great mortality occurred, even shelter in sheds, etc., not being sufficient to save them.

During the period mentioned above, lasting ten days, with an average temperature of about 21 degrees Fahr. below zero and a minimum of 40 below,* sparrows were found dead in city streets and around farm buildings by observant farmers in many parts of the province, while a number of the birds hardly able to fly were also noticed. The chirp so commonly associated with them remained unheard for days, as if the fear of death was upon them and all were struggling for very existence, as indeed was the case with those individuals obliged to pick up a living in the open air. Many undoubtedly perished from cold and starvation, the latter being the direct result of the former.

Thus it is seen that there is a limit to the birds' range, so far as open air is concerned. This was also demonstrated in southern Greenland by introduced sparrows failing to survive more than a few seasons.

There are, therefore, but two ways in which the House Sparrows can withstand our northern climate: (1) by sheltering themselves in buildings containing animals of some kind, or (2) by migrating to warmer regions during the colder months. Both these methods have already been adopted. Migration has taken place, to some extent, for several years past and is apparently becoming rapidly more general, so that now it is not an uncommon occurrence to see fifty or more birds moving south or north according to the time of the year. Of course,

* These researches are from the meteorological station at Aweme.

many birds move into the cities to winter, but apart from this there is undoubtedly a movement south and back again. The southern flight takes place at many odd times, but chiefly during November, and the return in March and April.

The other group confines itself almost entirely within buildings throughout the colder months and only appears outside during the warmer hours of each day, or when the weather is not excessively cold. Thus we have the domicile birds seeking winter quarters at home and the more restless individuals preferring to move to milder climates, even though that entails a long journey twice yearly. The question is, will this lead, in time, to two distinct races? Or, will the individuals of both inclinations, or habits, mix? By watching the resident birds I am led to believe that these commence to breed earlier than their migratory-inclined relatives, and if this is so it is possible to conceive that use or disuse of wing power, accustoming the eyes sufficiently to partly dark buildings to pick up food, different winter conditions and many other considerations might eventually cause a change; just as geographical conditions have caused so many local races to appear.

I believe much valuable information might be secured as to migration and acquired habits, by a careful study of the English Sparrow, especially if observations were made in all parts of the continent. The birds are already learning to migrate and to build nests in trees away from buildings, in fact they are showing marvelous powers of adapting themselves to new conditions of life, and it would be a great pity to lose an insight into their evolutionary characters through lack of careful study.

It would be interesting to know how far the birds move south, whether they become more plentiful in any special State during the winter months than in the summer. Does the winter movement exceed the southern limit of the summer range? and, are there any differences in the habits of securing food, etc., in those parts of the continent where shelter from cold is unnecessary?

THE FOREST RESERVES.

(Synopsis of a lecture given by Mr. A. Knechtel, Inspector of Dominion Forest Reserves, on Feb'y 26th, 1909, under the joint auspices of the Ottawa Field-Naturalists' Club and the Ottawa Teachers' Association.)

It would almost seem as if the white race had begun wrong on this continent. Needing cleared land for agriculture, we began in the woods, and now when we need the woods we begin

on the cleared land. The prairie should have been placed near the Atlantic and the woodland in the Northwest. Arranged as it was with the forest on the land that was close to the market for its products, forest destruction was at first a necessity and later became a habit. Fire, the good servant in clearing the land, ran rampant, carrying forest destruction far beyond the necessities of the people.

The earliest settlers coming from Europe were used to forest conservation. They had practised it in the countries from which they came. Forest destruction was to them a new thing; but the forests were so vast that they thought there never could be a scarcity of wood, and they reasoned that the more the forest was destroyed the more the agricultural interests of the country would be advanced. But the modern settler sees the forest in a different light, especially so in the great Northwest,where, on the wide prairie, wood is a luxury. To him forest conservation is the necessity, not forest destruction. He has no delight in the devastation of the woods by fire, and he hails with hope legislation and management tending to improve the condition of the forest. He sees clearly that his comfort and his agricultural interests are closely dependent upon a plentiful supply of wood.

The country is so vast and the demand for wood so great that it is a tremendous problem to so manage the forests that this demand may be met continuously. Hope seems to lie in the creation of forest reserves, and the policy of setting aside land to be used as forest reserves is now pretty well established by the Dominion Government.

The Dominion Forest Reserves are intended to preserve and produce a perpetual supply of timber for the people of the prairie, the homesteader's needs being considered of first importance. They are not intended to furnish wood for the lumber trade. Hence the policy of the reserves is favorable to small mills rather than to large ones which need large tracts of forest, and manufacture lumber beyond the needs of the settlers.

Let us consider some of the various purposes that forests subserve. In the first place, we need them to supply us with wood, and wood we must have to cook our food; to build and furnish our houses, our railroads, our steamships; to erect our telegraph and telephone lines; to mine our metals and our coal, which takes no small amount of wood; to supply us with paper, charcoal, tan-bark, dynamite, boxes, tools, pails, matches, and many innumerable articles.

On going from a forested country to a prairie, one realizes the importance, convenience and cheapness of wood to a home. To be sure, coal and gas may be used for fuel, and brick, stone, cement and iron for building; but wood is still largely used

for such purposes in places where it must all be imported and is very high in price. Even in Venice, Italy, the lecturer saw in the canals several barges laden with firewood and he was astonished at the quantity of wood used for other purposes. In Italy the use of wood is reduced to the minimum, and yet the country finds it necessary to import twenty-five million cubic feet annually, although she herself produces two hundred and forty-five million cubic feet annually.

Then, we need forests to give an even flow of water in the streams, to prevent the washing away of the soil, and to act as a break to the wind. In some parts of the Northwest the soil is a peculiar clay loam that breaks beneath the feet like ashes. In other parts it is a light sand. Such soil is picked up and carried by the wind as if it were light snow. To prevent this drifting of soil the settlers are planting shelter belts in many places. The Dominion Government has already sent out from Indian Head eleven million trees free of charge for this purpose.

Forests are needed also for health, rest and recreation, and to furnish food and shelter for the game and the fish. The esthetic value the forests have for the country one learns to appreciate in travelling over it. The trees with their variety of form and richness of coloring, clothing the hills and bordering the lakes and streams, lend a peculiar grace and loveliness to the landscape.

Some of the reasons why forests should be preserved have now been given. They furnish wood, feed springs, prevent floods, hinder erosion, shelter from storms, protect the game and fish, and give the country esthetic features. How then can the forests best be preserved?

To protect the forest from fire is the first law. In our forests where old rotten logs lie everywhere on the ground, and where the lumberman leaves the tops of trees, and gathers the brush into heaps as if getting the woods ready for burning, the question is difficult. In Europe, where the brush is all utilized, and where even the stumps are taken out of the ground for fuel, the problem is comparatively simple.

The Forestry Branch of the Department of the Interior keeps constantly in the woods a large force of fire rangers, whose duty it is to prevent and extinguish forest fires. They prevent fires by posting along roads, trails and streams cloth notices which state the law in regard to the use of fire. They also call upon the farmers and caution them in regard to burning fallows, logs, stumps, brush, grass and straw stacks in violation of the law.

Then, these fire rangers extinguish fires that start in the woods. It is their duty to warn out the settlers, who are obliged by law to obey the summons, and direct them in fighting the fire.

When a forest fire occurs there is a deplorable loss. The forest is a great chemical laboratory, taking air, and earth, and water, and combining them together for the use of the people. Fire comes along, the laboratory is burned, wood production stops and the people must do without.

There is a common notion that the forest will restore itself, and that valuable species of trees will by natural seeding again cover the soil. Such hope is in most cases vain. Poplar and white birch will probably occupy the ground; but the hope that the spruce and the tamarac will again cover the soil is just a poetic dream. These, to be sure, do reproduce in certain places and on certain soils; but if one observes carefully the conclusion is forced upon him that this kind of reproduction of the conifers is not going on with sufficient rapidity to furnish a perpetual supply of timber to meet the demand of the country. If the conifers are to be kept in the reserves in commercial quantity they will need to be reproduced artificially, either by sowing the seed or planting small trees. The Canadian Government has already begun thus to provide for the future.

The forest cannot be properly managed without the cutting of trees. Like the farmer, the forester has his seed time and his harvest. Agriculture produces food crops; forestry, wood crops. The lumberman harvests the natural wood crop, which Nature has taken about two hundred years to produce; the forester harvests an artificial one, which takes him about eighty years to produce. The lumberman takes in his harvest everything from which he can make present profit; the forester leaves the smaller trees in the forest to grow into future values. It is of no concern to the lumberman if the falling timbers crush little trees or the skidding tear them out by the roots. They offer no present profit and he looks upon them as worthless; but the forester sees in these young trees his future harvest and gives them his most earnest care. The lumberman's path has been full of fire. In many places he has been followed by flaming forests and dense clouds of smoke. But in the forester's tracks the green trees grow, forests again flourish on the denuded wastes, and shed upon the whole country their benign influences.

REPORT OF THE ENTOMOLOGICAL BRANCH, 1908.

The members of the Entomological Branch have been active during 1908. The season on the whole from the collecting standpoint was better than it has been for several years, notwithstanding the continued drought which began in early June and lasted well on into September. Many interesting species

of insects have been taken during the season in the Ottawa district by local members.

The Entomological Branch, in the death of its foremost leader, Dr. James Fletcher, has sustained an irreparable loss. It is hardly necessary to refer here other than briefly to this sad event which is felt so keenly by the Club, as the January issue of the OTTAWA NATURALIST is a Memorial Number containing tributes from leading members.

In August we were glad to welcome to the Branch, Mr. Herbert Groh, a new Assistant in the Division of Entomology and Botany of the Dominion Experimental Farms.

During the winter months the fortnightly meetings of the Branch have been continued. These meetings are most helpful. Many specimens of great interest are exhibited at each meeting and much information given concerning their habits, etc. At these meetings it is customary for each member to bring something to exhibit or some paper to read. New books on entomology are shown from time to time, and in this way the members are kept in touch with publications as they appear. It is a pity that more members of the Club do not take an interest in insect life. There is no more promising field for good work of a scientific nature than in entomology, and certainly no subject of more intense interest. The pleasure derived from watching an insect emerge from its egg, or a caterpillar change to the chrysalis state, or a moth issue from its cocoon, is most fascinating.

As in previous years some of our local members brought back with them from their distant fields of labour, small collections of insects of special interest. Mr. Joseph Keele, of the Geological Survey, made some valuable collections at the mouth of the Gravel River and along the McKenzie River adjacent, on the eastern slope of the Rockies. Mr. C. H. Young, of the same department, spent the months of August and September at the Biological Station, Departure Bay, B.C., with our highly esteemed Honorary Member, the Rev. G. W. Taylor, who is now there as Curator of the Station. Mr. Young collected insects of several orders, among which are some of much interest. Mr. Douglas H. Nelles, of the Alaska Boundary Survey, spent the summer in the Yukon district between Whitehorse and the 141st Meridian and brought back with him a small collection of butterflies. Mr. Andrew Halkett, of the Fisheries Museum, returned to Ottawa in November, with a small collection of insects taken in Alberta. Dr. Fletcher made a hurried trip to British Columbia in September and October and while stopping over for a day or two each at Nepigon, Ont., Regina, Sask., Banff, Alta., and Departure Bay, B.C., collected many insects

of value. Mr. Arthur Gibson spent the most of July at Youghall, N.B., and while there made collections in all orders.

The members of the Branch were delighted to have with them in Ottawa during spring and early summer, Mr. Norman Criddle, of Aweme, Man. Mr. Criddle while here attended the spring excursions of the Club and also did some splendid collecting in the neighborhood.

During the year Mr. Harrington completed a paper on Superfamily III of the Hymenoptera of the Ottawa District, which was published in the July number of the OTTAWA NATURALIST. Dr. Walker's paper on the Dragonflies of the Ottawa District appeared in the April and June numbers of the NATURALIST. This has been of much help to members of the Branch.

Among the more interesting insects taken during the year at Ottawa, within the area limited by the Club, as the Ottawa District, the following may be mentioned:—

LEPIDOPTERA:

Brenthis triclaris, Hbn. Mer Bleue, June 6, three specimens, (Young, Criddle, Gibson).

Phyciodes tharos, Dru., var. *packardii*, Saund. Mer Bleue, (Young).

Phyciodes batesii, Reakirt. On railway track between Cache Bay and Beaver Meadow, June 13, (Gibson).

Pholus pandorus, Hbn. Larva on Virginian creeper, moth emerged July 8, (Gibson).

Hyphoraia parthenos, Harr. July 1, (Baldwin).

Catabena lineolata, Wlk. July 20, (Baldwin). New record for the district.

Platysenta videns, Grt. June 6, (Gibson).

Pachnobia monochromata, Morr. Mer Bleue, July 3, (Young).

Agrotis geniculata, G. & R. Meach Lake, August 31, (Fletcher).

Mamestra gussata, Sm. April 24, (Young).

Homoptera minerea, Grt. Britannia, June 20, (Baldwin).

Homoptera helata, Sm. Britannia, June 20, (Baldwin).

Crambus bidens, Zeller. Mer Bleue, July, (Young).

Crambus zeellus, Fern. July 15, (Gibson).

Crambus youngellus, K. Mer Bleue, July 2-10, (Young).

Eucosma medioviridana, K. August 21, (Young).

Coleophora elæagnisella, K. Larvæ abundant on *Elæagnus argentea*; moths emerged July, (Fletcher and Gibson).

Lithocolletis basistrigella, Clem. Bred from oak, March 11, (Young).

Argyresthia laricella, K. Mer Bleue, reared from terminal twigs of *Larix americana*; moths issued June 12-23, (Fletcher and Gibson).

COLEOPTERA:

Hydrophilus ovatus, G. & H. May 12, (Fletcher).

Acanthocinus ædilis, S. A specimen of this fine European beetle was found at Ottawa by Mr. R. B. Whyte among some packing in a box of chinaware received from Germany.

HYMENOPTERA:

Bombus rufocinctus, Cress. September 20, (Fletcher). This species is rare in eastern Canada.

Bombus virginicus, Oliv. Mer Bleue, June 6, (Gibson).

Ephialtes gigas, Walsh. Hull, June 13, (Gibson).

HEMIPTERA:

A number of species new to the Ottawa list have recently been determined by Mr. E. P. Van Duzee. Among these may be mentioned:

Telamona ampelopsides, Harr., July 14, (Gibson).

Cyrtolobus vau, Say. June 29, on red oak, (Fletcher).

Cyrtolobus griseus, Van D. On oak, August 25, (Metcalfe).

Scolops sulcipes, Say. On goldenrod, September 5, (Groh).

Liburnia foveata, Van D. Mer Bleue, June-September, (Metcalfe).

Phlepsius irroratus, Say. October 8, (Fletcher).

Thyreocoris unicolor, P. B. Aylmer, August 29, (Groh).

Geocoris limbatus, Stal. Mer Bleue, uncommon, (Metcalfe).

Plagiognathus obscurus, Uhler. Aylmer, August 29, (Groh).

Corythuca marmorata, Uhl. June, rare, (Metcalfe).

Ranatra quadridentata, Stal. July, (Metcalfe).

Hydrometra martini, Kirby. July, (Metcalfe).

W. H. HARRINGTON,
ARTHUR GIBSON,
C. H. YOUNG,
J. W. BALDWIN,
} Leaders.

BOOK REVIEW.

Thirty-ninth Annual Report of the Entomological Society of Ontario: Ontario Department of Agriculture, Toronto. This is a volume of 152 printed pages, with 19 excellent plates. Like all its worthy predecessors, it is a publication which can be perused with interest, not only by the scientific and working entomologist, but equally by the novice and merely casual reader. It contains the official report of the proceedings of the annual meeting of the Society, held at Guelph in November last, including the reports of the Branch Societies, and of the District Directors and other officers, the discussions on insect pests of the

season, and the various papers presented during the two days' session. Among the latter are several by members of the Ottawa Field-Naturalists' Club who attended the meeting, viz.: *Hydroecia micacea* in Canada, by Arthur Gibson; Some Beetle Haunts by an Amateur Botanist, by F. J. A. Morris, Port Hope; Notes on the Occurrence of Lachnosternas in 1908, and, Collecting with a Lantern-trap in 1908, by J. D. Evans, Trenton, Ont.; The Strawberry Weevil, by Prof. W. Lochead, Macdonald College, Que.; The Farmer's Woodlot, by Rev. T. W. Fyles, Levis, Que; Life History of *Euchaetias oregonensis*, by H. H. Lyman, Montreal; and, Injurious Insects in Ontario in 1908, by Rev. Prof. Bethune, Guelph. Two excellent papers by Dr. E. P. Felt, Albany, N.Y., The Economic Importance and Food-habits of American Gall Midges, and, The Interpretation of Nature, also appear. An article of more than ordinary value is the Catalogue of the Gall Insects of Ontario, by T. D. Jarvis, Guelph, which arranges the species which he has found in his several years of collecting, under their host plants, and furnishes means of identification by the galls. A bibliography of references completes his useful treatment of the subject. The Entomological Record, which has for some years been contributed by James Fletcher and Arthur Gibson as a regular feature, again appears, presenting in a concise way the most valuable of the results of Canadian collectors' activities during the year. Also, the loss which entomology has suffered in the removal by death of two of its foremost representatives, Dr. Fletcher, late President of the Society, and Dr. W. H. Ashmead, of Washington, is given suitable recognition in brief references to their respective careers.

H. G.

OBITUARY.

THE LATE REV. CANON BURMAN, B.D.

The death of Canon W. A. Burman, which occurred on January 20th, is a heavy loss to the people of Winnipeg and of the Northwest. For so many years he has been among us that his place will indeed be difficult to fill.

The late Canon, who was a member of the Ottawa Field-Naturalists' Club for many years, was an Englishman by birth and came to Manitoba in the late seventies. He entered the ministry in 1879 and soon became well known and loved for his work among the Sioux Indians. He was made Rural Dean of Brandon in 1886, and was given charge of the Rupert's Land Industrial School (Indian) in 1889. In 1893 he came into Winnipeg as incumbent of St. Peter's, combining with his duties there

those of the Rural Dean of Lisgar. The work proving too onerous, he resigned in 1903, to take up the position of bursar and steward of St. John's College, Winnipeg, which, with the position, in the same institution, of lecturer in botany and the English Bible, he held until his death.

As a botanist Canon Burman was widely known. An enthusiastic collector, his herbarium of local plants is easily the finest in Manitoba. Not only local plants are represented however. Some five years ago, I well remember a delightful evening of the Manitoba Natural History Society, when Canon Burman showed a splendid collection of Arctic plants.

To know the Canon was to admire and love him. Quiet, unassuming, he was always engaged in work for the benefit of others, as the history of our Humane Society and that of our Children's Aid Society testify.

Some years ago it was found he was suffering from tubercular trouble, and nothing could be done to check its inroads. Just before Christmas I spoke to him and he told me of an intended visit to Texas in January. His illness took a worse turn and he was unable to leave. For several weeks he suffered intensely but with marvellous fortitude and then death intervened.

Truly Canada has reason to mourn that two such men as Dr. Fletcher and Canon Burman—warm personal friends—have been called away within such a short space of time.

J. B. WALLIS.

MEETINGS OF THE BOTANICAL BRANCH.

At the Botanical Branch meeting of February 27th, a discussion on the inter-relation of soils and plants was led by Mr. George H. Clark, sixteen members of the Club being present.

Evidence was presented to illustrate that plants are grouped in nature according to the physical, chemical and biological conditions of the soil. A knowledge of plant relations, range of conditions respecting their habitat, and their habits of growth under those varying conditions, serves the botanist as an index to the range of temperature of the district, the moisture, and the physical, chemical, and, to some extent, the biological conditions of the soil on which the species are found.

"De Candolle's theory of the excretions of plants" and the results of recent experiments and observations pertaining to toxic excretions from the roots of plants were discussed. Experiments in the seed laboratory at Ottawa showed that after making germination test with cereal grains, it was necessary to discard the soil from the boxes before making a subsequent

germination test with cereals. Aeration and drying of the soil produced only a slight improvement. The average percentage germination from twelve tests of oats in a good fresh compost soil was 86 per cent. When the same soil was used for subsequent germination tests, after being aerated and dried, the average percentage vitality of twelve tests of the same oats (100 grains of oats being used for each test) was reduced to 76 per cent.

If the theory of toxic root excretions is to be accepted as an explanation for this falling off in vitality, as would be shown by soil test, it would seem that the poisonous excretions from the first crop of oats proved to be fatal to the weaker plants from the second and subsequent crops. Since the oat plants had been left in the soil fourteen days only, the reduction in plant food would be inconsiderable.

If, as contended by supporters of the "De Candolle theory of root excretions," plants excrete from their roots substances which impair growth within themselves and render the soil less suitable to the growth of other plants belonging to the same order or having the same requirements in respect to plant food, then the necessity of crop rotation in agriculture and horticulture becomes more obvious; the reasons for the so-called clover sickness in some soils, "fairy rings" of mushrooms, and much in connection with plant relations in nature also becomes easier of explanation.

It was suggested that, in consideration of how plants feed, it would seem reasonable to expect that these toxic root excretions, if any, would be more abundant with a given species on some soils than on others, owing to the relation between the requirements of the plant and the mineral constituents in solution in the soil; also that bacterial life and the fermentation induced by it in the soil might be expected largely to overcome the effects of toxic excretions from plant roots.

A short discussion on the longevity of seeds and recent work by Dr. Ewart, of Melbourne University, Australia; Dr. Croker, of Chicago University, and Dr. Duval, of Washington, D.C., was also taken up, and the progress results of some work that is being conducted by Mr. William Bond, of the seed laboratory staff, in making periodic germination tests of weed seeds that were collected in 1902, were presented. The evidence now available would seem to make clear that weed seeds and other seeds which are buried in the soil do not retain their vitality as long as when stored in a cool, dry place. There are relatively few kinds of seeds which will retain their vitality for a longer period than, approximately, fifteen years. Ewart found from exhaustive tests that of the species which are best able to retain

vitality in their seeds for a long period, those belonging to the Leguminosæ are in greatest numbers.

G. H. C.

"The Origin of Our Cultivated Fruits" was the main subject under discussion at a meeting of the Botanical Branch held at the home of Mr. R. B. Whyte on March 6th. There were present in addition to the Chairman, Messrs. Attwood, Campbell, Bond, T. E. Clarke, Geo. H. Clark, Eddy, Binnie, Groh, Morris, and W. T. Macoun.

The origin of our cultivated fruits had evidently been thoroughly investigated by Mr. Whyte, who gave a very interesting account of what was known in regard to it. Most of our fruits have been cultivated for such a long time that there is little definite information as to their origin. It is known that the Romans cultivated the apple, for Pliny wrote about it. An apple was also exhibited by Mr. Eifrig at a former meeting of the Botanical Branch taken from the ruins of the habitations of Lake Dwellers in Switzerland who lived probably a thousand or more years before the Roman era. Practically all of the cultivated apples are derived from European species, the only named variety with American blood being the Soulard crab, one of whose parents was *Pyrus coronaria*. The pear is also a native of the old world and has evidently been cultivated since very ancient times. One of the first historical references to the pear is in Virgil, where it is stated that "Varieties of pears are almost countless and nine-tenths are unworthy of census." The two species of pears from which most of the cultivated varieties came are *Pyrus communis* and *Pyrus sinensis*.

The peach is another fruit of which little is known regarding its origin, but it is believed to be a native of China and taken to Persia in very early times, in which country it has been improved very much.

The early history of the European plum is also wrapt in mystery, but it is supposed to have been derived from *Prunus spinosa* and later from *Prunus domestica*. The Asiatic species from which comes the Japanese plums is *Prunus triflora*. The Apricot plum, *Prunus Simoni*, from China is another Asiatic species. In America improvement is just beginning with the native species, *P. americana*, *nigra*, *hortulana*, and *angustifolia*.

The European grapes are derived from *Vitis vinifera*, improvement evidently having been begun in very early times. In America, hybrids of *Vitis Labrusca*, the fox grape, and this European species had given marked results. One of the earliest known grapes of American origin is the Catawba, found wild in Maryland in 1819. It probably has European blood. The

Isabella also appeared about the same time. The Concord grape, a pure seedling of *Vitis Labrusca*, was introduced in 1853. Rogers' Hybrids followed in 1856, and since that time many have been introduced. No grapes of high quality have yet been originated from the Canadian species including *Vitis riparia* and *V. cordifolia*, although some improved varieties have been introduced.

All our cultivated red currants have been originated from the European species *Ribes rubrum*. This fruit has been cultivated since the middle ages as has also the black currant which has also been derived from the European species *Ribes nigrum*. No good improved forms of our native *Ribes floridum* have been introduced.

The European gooseberry, *Ribes Grossularia*, began to be cultivated in the 16th century. It is a very important fruit in Great Britain, where it has been cultivated for 300 years. The greatest improvement has taken place in the last 100 years and to-day specimens are produced weighing two ounces each. The climatic conditions in most inland places in America are not suited for the European gooseberry and it does not thrive well except under specially favourable conditions. The native American species, *Ribes oxyacanthoides* is the parent of the Houghton, an improved form, and from the Houghton has sprung the Downing, probably with some European blood in it. The Pearl, one of Dr. Wm. Saunders' productions, is a hybrid between Houghton and a European variety. *Ribes Cynosbati* has not given any good variety yet, but this has been improved by Dr. Saunders by crossing it with the European gooseberry.

The red raspberry has been cultivated since the 4th century and probably before. It became popular in the 16th century in Europe. The European varieties are derived from *Rubus Idæus*. For the most part, these are not hardy in the colder parts of America. Most of the named sorts grown in Canada are from the native species, *Rubus strigosus*, which began to be cultivated about 1831. The Herbert raspberry originating with Mr. Whyte, has probably considerable European blood and may claim as its parent some two of the varieties Herstine, Clark and Franconia.

Practically all the named black cap raspberries grown to-day are chance seedlings of the wild species, *Rubus occidentalis*, as are the cultivated blackberries of *Rubus allegheniensis* and its varieties. Other fruits of less importance were also dealt with by Mr. Whyte.

The lines of improvement in our cultivated fruits suggested by him were: the raising of new sorts of apples from seed specially suited for certain conditions; improvement of American

plums to ameliorate the skin; the breeding of red currants for greater mildness, and black currants for size; the raising of seedlings of the European gooseberry to obtain varieties more immune from disease; and the raising of seedling grapes from the many hybrid forms already in existence.

In the discussion which followed, Mr. Whyte stated it as his belief that the growing of seedlings under very favourable conditions would change, and cause to be perpetuated, the characteristics of a seedling in respect to vigor of plant, size and flavor of fruit, etc. In other words, that after a seed had germinated the merits of that seedling would not necessarily depend on inherited characteristics, but would be largely influenced by the environment up to time of fruiting. A curious freak was shown by Mr. Geo. H. Clark, it being a cane of Cuthbert raspberry which instead of being of the usual shape was quite flattened out, having grown this way.

In order to ensure a record being kept of the meetings of the Botanical Branch, it was decided to recommend a Botanical Associate Editor to the new council of the Club, Mr. W. T. Macoun being nominated for this office.

W. T. M.

CANADIAN SPECIES OF THALICTRUM.—II.

By EDWARD L. GREENE.

The species discussed in our first paper, namely, *T. alpinum*,* is in many particulars widely different from every other; so very different that no member of any other group leads up to it. The transition to any others is abrupt; therefore it is unimportant what other meadow rue be selected to immediately succeed it in a systematic sequence of the species. It may as well be that other northern type, or aggregation, that passes under the name of *T. dioicum*.

Out of the great diversity of plants so designated in books and herbaria there is not one that can to any certainty, or even with any high probability, be identified with that of Linnæus. There is nothing in the name itself that is indicative. Almost all meadow rues, certainly the greater proportion of the American species, are dicœcious. Moreover, the short Linnæus description would be wholly inadequate to the determination of his type, even if the description were not also in two points false for anything that botanists have heretofore called *T. dioicum*; for he says that both the sepals and the filaments of his plant are

* cf. Ott. Nat. xxiii.

white.† To every one knowing American meadow rues such an expression will seem to point to something belonging to the group of *T. polygamum*; yet when he assures us that the plant he has in mind is hardly a foot high, and is also distinguished from all other members of the genus by a drooping foliage, we seem to see that he probably had something of this *T. dioicum* sort before him.

I have met with no good evidence that this type of *Thalictrum* was known before Kalm; though Philip Miller says that Parkinson grew the plant a hundred years earlier.‡ I can not, however, verify this by anything which I find in Parkinson.

Out of that multitude of things which, while answering to the Linnæan account of the size and habit of *T. dioicum*, are still widely dissimilar among themselves in essential marks of flower and fruit, it is necessary that some one marked type be selected, and that of necessity arbitrarily, to be described, as not one of them ever yet has been, with something approaching fulness and precision. To such a type, though arbitrarily chosen from among others, the name *T. dioicum* may be assigned, according to the now prevailing custom; though from several points of view it would seem wiser to abandon that name altogether, as one that has never been adequately published.

THALICTRUM DIOICUM. *Thalictrum dioicum*, Linn., Sp. Pl. 545. Stem solitary, 1-2 feet high, upright from a tuft of fleshy-fibrous widely spreading and not deeply seated roots; leaves 2 or 3, ample for so small a plant, long-petioled, thin and delicate, deep-green above, pale beneath, glabrous; terminal leaflets in maturity 1 inch broad or more, of suborbicular outline, commonly with subcordate base, the length seldom quite equalling the breadth, primary lobes 3, reaching to near the middle, the central one broadly equally and shortly 3-lobed, the other two unequally 2-lobed, or sometimes entire, all lobes short and very obtuse; lateral leaflets smaller, in general 3-5-lobed with little or no distinction of primary and secondary lobes: staminate plant with fewer flowers and less ample inflorescence than the pistillate, its sepals 4, oval, obtuse, thin, pale, often purplish-tinged, delicately parallel-veined; anthers green, not quite as long as the purplish filaments, linear, acutely rather long-pointed: achenes rather light-green, less than 5 mm. long, of somewhat obliquely elliptic outline, the about 10 ribs thick but acutely edged, the furrows between them as broad and acute.

Billings' Bridge, Ottawa, Ont., J. M. Macoun, 12 May, 1891.

† Linn. Sp. Pl. 545.

‡ Mill. Dict. Ed. vii (1749).

being Geol. Surv. No. 841, a rank staminate plant in flower; also from the same station and by the same collector, June, 1898, Geol. Surv. 59,615, the summit of a plant in mature fruit; also "Whirlpool Woods," Niagara, Ont., 9 May, 1901, Geol. Surv. 33,609, staminate plant in flower; Wingham, Ont., J. A. Morton, May, 1891, Geol. Surv. 840.

Numerous localities for the same type as occurring within the United States need not here be cited.

THALICTRUM DIOICUM var. ADIANTINUM. Leaves of a more vivid and rather metallic green above, also marked with delicate dark veins and veinlets; both terminal and lateral leaflets more slightly lobed primarily as well as secondarily, the secondary extremely short and subtruncate, thrice, and even more than thrice as broad as long: achenes a trifle shorter and notably thicker than in the type, being 4 mm. long and of oval-elliptic outline, the ribs very thick, turgid, broadly rounded, the intervening furrows, when not nearly obsolete, very narrow and sometimes deep.

Southwestern Ontario, near St. Thomas, Mr. Macoun, 24 June, 1907, Geol. Surv. 72,515.

The specimens of this quite remarkable and very handsome meadow rue consist of the terminal portions of two fruiting plants. The largest is a foot long, and shows but one of the usually two or three leaves. The leaflets, no less clearly than the achenes, indicate relationship of some more or less close degree to the foregoing. If when flowers of plant become known, especially the staminate, these show as much divergence from the type as do the leaflets and the fruits, the rank of a distinct species will be assured for it.

THALICTRUM DIOICUM, var. HURONENSE. Size and habit perfectly as in the type, but leaflets almost without distinction of primary lobes and secondary, being not very unequally 5-7 crenate-lobed: sepals of staminate flowers, more green-herbaceous, purplish-edged, the veinlets faint; anthers much elongated, longer than the filaments, greenish-yellow, pointless, not even mucronulate but rather obtuse, or at least obtusish.

Port Huron, Michigan, 4 May, 1896, Charles K. Dodge; the type specimen being in Herb. Univ. of Wyoming. The remarkably long and quite blunt anthers no less than the peculiar cut of the foliage mark this as a thing not to be confused with our type of *T. dioicum*. The fruit when known may confirm it in the rank here assigned, or may demand its promotion.

There is a fragment of a pistillate specimen mounted with the staminate, purporting to have been obtained a week later in the same neighborhood; but the one leaf which this fragment bears shows leaflets of a cut so extremely different that

I am unable to think of it as representing the same species. The fruits of this fragment are immature.

Since Port Huron, whence this new variety comes, is only separated from Ontario by the St. Clair River, it becomes extremely probable that this plant will be found also on the Ontario side; so that it ought to be here inserted at least provisionally as a Canadian type.

THALICTRUM DIOICUM, var. LANGFORDII. Stem 2 feet high, marked for 6 or 8 inches up to the first and sometimes the only well developed leaf; leaflets much smaller than in the type, seldom subcordate or even subtruncate at base, and more inclined to flabelliform, their lobes somewhat less obtuse: filaments short, purplish; anthers also not long as in other forms, somewhat uncinate-mucronate: achenes long and narrow, obliquely oblong, fully 5 mm. long, their 10 ribs not very thick, closely approximate, more or less wavy.

Vanorder's Grove near Kingston, Ont., T. E. Langford, 1897, the flowering specimens on the 10th, the fruiting on the 25th of May. Type specimen in Herb. Field Museum, Chicago, sheets 83,939 and 83,940.

While the foliage of this beautiful form does not so widely differ from that of ordinary *T. dioicum*, the carpels, with their irregular outline and undulating rather thin ribs, might well be thought to mark a species. The same is in Herb. Field Mus., sheet 190,985, from Hamilton, Massachusetts, by the late Thos. Morong, in 1875, the flowers in May, fruit in June; the waviness of the ribs less pronounced.

THE FLETCHER MEMORIAL FUND.

Since the appearance of the note in our April issue, a further number of subscriptions have been received from members of the Club and friends of the late Dr. Fletcher. There must still, however, be many members who are desirous of contributing something to the above fund, and it would help the work of the Committee very much if they would intimate the amount of their subscription, at an early date, to the Secretary-Treasurer, Mr. Arthur Gibson, Central Experimental Farm.

The Ottawa Field-Naturalists' Club.

Patron:

THE RIGHT HONOURABLE EARL GREY,
GOVERNOR-GENERAL OF CANADA.

Council 1909-1910

President:

Mr. A. E. Attwood, M.A.

Vice-Presidents:

Mr. A. Halkett. Rev. G. Eifrig

Librarian:

Mr. C. H. Young, Geological Survey.

Secretary:

Mr. T. E. Clarke, B.A.
(470 O'Connor Street).

Treasurer:

Mr. Arthur Gibson,
(Central Experimental Farm).

Mr. Alex. McNeill.
Mr. L. H. Newman, B.S.A.
Mr. J. W. Gibson, M.A.
Mr. F. T. Shutt, M.A.
Mr. A. G. Kingston.
Miss M. M. Scott.
Miss F. M. Burt.
Miss B. Gilbertson.

Standing Committees of Council:

Publications: L. H. Newman, Alex McNeill, F. T. Shutt, C. H. Young, A. Gibson, Miss M. M. Scott.

Excursions: G. Eifrig, T. E. Clarke, A. McNeill, J.W. Gibson, A. G. Kingston, A. Gibson, Miss B. Gilbertson.

Soirées: A. Halkett, L. H. Newman, F. T. Shutt, A. G. Kingston, J. W. Gibson, Miss F. M. Burt.

Leaders at Excursions:

Geology: H. M. Ami, W. J. Wilson, T. W. E. Sowter, W. A. Johnston.

Botany: W. T. Macoun, John Macoun, D. A. Campbell, L. H. Newman, T. E. Clarke, H. Groh.

Entomology: W. H. Harrington, A. Gibson, C. H. Young, J. W. Baldwin.

Conchology: J. F. Whiteaves, F. R. Latchford, S. E. O'Brien.

Ornithology: G. Eifrig, A. G. Kingston, H. U. Morris.

Zoology: E. E. Prince, A. Halkett, E. E. Lemieux, E. LeSueur.

Archæology: T. W. E. Sowter, J. Ballantyne.

Meteorology: Otto Klotz, D. A. Campbell, A. McNeill.

Auditors:

R. B. Whyte. J. Ballantyne.

Membership Fee to O.F.N.C., with "Ottawa Naturalist," $1.00 per annum.