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THE OTTAWA NATURALIST

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SOME SANITARY CONSIDERATIONS REGARDING THE CONSTRUCTION, HEALTH AND VENTILATION OF HOUSES*

By Peter H. Bryce, M.A., M.D., L.R.C.P.S, Editor, Chief Medical Officer Dept. Interior.

Last year I had the pleasure of addressing the Club on the subject of climate in relation to health, and have thought it may be of interest and perhaps profit to speak to-night on the subject of House Atmospheres or Artificial Climates.

The value of fresh air and sunlight and the evils of foul air were then set forth, while I pointed out that these evils consisted always in the excess of carbonic acid, of lessened oxygen and deficient humidity in the house atmosphere in winter. It will be plain that the location of the house, as regards the nature of the soil, the free exposure to sunlight and air currents must be of much importance as regards health; but as it is not always possible to select the best location in the streets of a city, it is some comfort to remember that so long as the house can have the wind blow freely around it, there can be at least an assurance that ample fresh air can be had if we choose to allow it to enter the house. Let us then deal briefly with the nature of the soil under the house. Ordinarily in this country, no difficulty will arise with regard to the presence of decaying organic matter under the house unless in some old filled up ravine in a city. The upper organic mold is taken off when the cellar is excavated, and the chief difficulty experienced is to get rid of ground water when the house is on a clay subsoil. Of course, in the city, an ordinary residence need not be more than 3 or 4 feet below the ground level, but with roof water and ground water running down the walls, provision must be made for its rapid removal to prevent a damp cellar, promoting organic decay as seen in moulds on the walls, on fruits,

*Address delivered before the Club, Jan. 7th, 1908.

etc. This can readily be effected by putting field tiles around the outside of the house wall 6 inches below the cellar level, and having them connected with the glazed tiles which will then carry away the ground water to the sewer. This is much more important and successful than attempting to keep out the water by laying cement floors and covering the walls on the outside with cement and wood tar, although both these are of supplementary value. How much difference there is in soils may be seen in the fact that different sands hold by capillary attraction from 15 to 25 parts in 100 of water, loam some 40 parts and clay 75 parts.

It is, however, most desirable that besides this drainage, we have a non-conducting wall, since the moisture of a cellar is often due to the wall of stone or cement being a good conductor and so, by stealing away heat, condensing the moisture on the cellar walls. This can be overcome by a wall with hollow spaces, gotten either by using hollow blocks or making a two-inch air space between the plaster and the wall, and providing by windows or other method for circulation of air.

Having arrived above the ground level, locality, as regards the price of stone, cement, brick, wood, etc., will assist in determining of what materials the house will be built. As regards warmth and dryness, it may be said, speaking generally, that the thicker the walls the stronger and warmer the house; but to even a greater degree warmth depends upon the nature of the materials used and the mode of construction.

To illustrate, it may be said that a wall made of silver a foot thick would be nearly ten times colder than one built of iron, as its conductivity is 1,000 to 125, while one built of stone is 100 times colder than one foot of air hermetically sealed between two boards, and glass 50 times colder, and brick 25 times colder than confined air of the same thickness.

It will be seen that this fact depends upon the relative conductivity of different materials, and of all the best non-conductor is a dry gas. We have to-day in a cement hollow wall combined much more nearly than in any other material, the elements of strength, warmth and cheapness, since while air spaces can be had with wooden and brick walls, the former will not remain close owing to its drying and warping, while a thoroughly good grouted brick wall with a really good air space will be notably more costly than cement.

The æsthetic question must be decided in conjunction with these several other elements. Having, however, gotten the kind of walls settled upon we have something to determine regarding the lighting of the house. The long side of the house ought,

if possible, to be to the south. The direct rays of sunlight are so active in promoting rapid metabolism in tissues, as observable in a plant placed in a south window, as compared with a north window, that nothing more need be said to illustrate the fact. Hence, we should get in all the sunlight possible.

As regards lighting, the amount of light required is large not only for sanitary purposes, but also for lighting up all parts of a room. One daily sees a householder either wishing, himself, or yielding to the desire of an architect to produce a so-called æsthetic effect by small, low, mullioned and small diamond-shaped panes in windows. It is absolutely wrong and only excusable if at all in a church, not in living or working rooms. A good rule is that the amount of the area of windows, placed as near the ceiling as possible, should be at least 1-5 of the floor area of a room, and direct sunlight ought to reach the farthest side of a room. Modern science, however, has done something to increase the diffusion of light by ribbed glass and luxfer prisms.

Having now got our house built as a protection against cold and well lighted, we turn to the interior and enquire how we are going to maintain its air in such a condition of normal purity, moisture and temperature as will conduce to the highest degree of health in the inmates. I assume, of course, that the house has up-to-date plumbing and water supply. Now, as stated in my lecture last year, the problem is how to maintain the air in such a state that the carbonic acid will not be more than 5 in 10,000 parts, also to see that the relative humidity is about 70% and that the temperature is 60° to 65° F. It seems simple, but in a practice it is found to be even in a small house a relatively complex problem. First, as regards the temperature, this manifestly depends upon the kind of heating apparatus. We have practically two kinds for everyday houses, viz., hot air furnaces, and hot water pipes, and both depend for their success upon their ability to transmit to the air of different rooms an adequate amount of heat economically. Almost all know that to conduct warm air to the side of the house against which a strong wind is blowing is very difficult, if other pipes are present to lead the warm air elsewhere. On the other hand, hot-water pipes will carry heat in an amount directly in proportion to the extent of pipes in a room. It is further true that a well-constructed hot-water furnace will transmit into the flow of water through it, more heat units than could be transmitted to the air surrounding a hot-air furnace.

But apart from these two economic advantages to set against the greater one of the first cost of the hot-water system, there are several other very important items as regards the effect of

heat on persons in the room. Let us note the difference. It will not have occurred to many of us to enquire just how it is that we are warmed by heat, and more will be surprised when I say we are ordinarily not warmed by a furnace, *but are only kept from getting cold or chilled.* How, I am asked? We shall see. As all know, our bodies in health are maintained at a temperature of 98 4 F., some 30 degrees higher than the ordinary air of the room, so that clearly the air of the room cools us by abstracting heat from us, rather than by warming us. But we know that we have no sensation of cold and are warm, which simply means that we have not lost our body heat to the air of the room so fast as to give us a sensation of cold. This is due to the non-conducting clothing which we wear and to the enveloping air being not too heated or too cold.

It is, however, quite manifest that what *too hot* or *too cold* means depends directly, other things being equal, upon the amount of fuel and upon the free circulation of the results of vital combustion in the human organism. The old person, the anæmic person, the person with poor circulation will be cold when the healthy are warm and so such must put more clothing on. But, moreover, there are in the air of the room say at from 60° to 70° F. some other differences depending upon the kind of indoor heating so great as to create very material differences in the effect of air at different temperatures upon the same person. I would recall to you the three ways by which all bodies lose their heat: (*a*) by radiation, (*b*) by conduction, (*c*) by evaporation. If we sit in front of a grate fire the air between the fire and us may be no higher than 70° F., but the side of our face towards the fire may actually be over 100° F. This is due to radiation and means that heat waves penetrate into the tissues and warm the body, penetrating indeed deeper than the skin as well as into the walls opposite the fire. The same result, but less apparent, is obtained by the radiation from hot-water pipes, while in addition these warm the air in contact with them and this, ascending, again warms the particles of air it comes in contact with by convection. Now it will be apparent that if air comes into a room from a hot-air furnace, it in no way fulfils the first principle of heating by radiation; hence, it is found by experience that the air of a room at 60° F. receiving radiant heat from a radiator often gives a sensation of comfort as great as hot-air at 70° to 75°. There is, however, another equally important cause affecting the loss of body heat, viz., degree of moisture in a room or its *relative humidity.* You will remember I spoke of the fact last year that air at 0° F. holds less than 1 grain of water vapour and that with every 20 degrees increase, say, to 70°, such increase of its

capacity takes place that it then will hold actually 7.9 grains, or eight times as much. Now we have already referred to moist air being four times a better conductor of body heat than dry air is; hence, while outer air at zero heated and brought into a room at 80° F. is made much drier and enveloping our bodies acts as a non-conductor of body heat, yet it actually serves to rob the body of its heat by its causing evaporation through insensible perspiration from the surface at so rapid a rate as to actually produce a sensation of cold. Indeed, experimentally we know that a room at 60° F., with a relative humidity of 70% approaches the happy medium of comfort and with no air currents occurring in the room lends to persons sitting still a sensation of *bien être* perhaps greater than any other temperature. It is further most important, from the standpoint of economy, since it is found especially in cold weather, that just as radiation is proportionately rapid in proportion to the difference in temperature between two bodies, so every extra degree of increased temperature required of a furnace means notably more coal consumed. Indeed, as much as 25% more coal it is estimated is required to maintain 70° F., instead of 60° F. in say zero weather.

It is, however, important to remember that into this heating problem other most important factors enter. Thus a single window radiates heat probably 25 times as fast as would double windows with tight space of air say 6 inches in thickness. Hence, a double window is a *sine qua non* to effective heating and ventilation in a cold climate. But more than this, a great difference is found in the radiation of heat between the north and south sides of a house, in cold weather. In the cold weather during the day the sun streams in the south windows by radiant heat warming all the walls as well as the air of the rooms. The north side is never so warm; but on the contrary, is exposed to the northerly winds which are found to rob surfaces of heat directly in proportion, not alone to their temperature, but also to their velocity. We thus have illustrated how many factors enter into the heating of even a small house. But we have said nothing of how in keeping the house warm we may also maintain its air fresh. One thing is quite clear, viz., if we exhale some 2 lbs. of carbonic acid in 24 hours, due to inhalation of oxygen (3 lbs.) and to tissue combustion that placed in a box sealed hermetically we would gradually exhaust all the oxygen or be poisoned by the carbonic acid and other volatile emenations from the body. Clearly we require to introduce fresh air and its oxygen, estimated to be at the required rate of 2,000 cubic feet of fresh air per person per hour. Naturally, when we do this, we must push out the foul air and so it comes about that we must by some simple

mechanical means introduce into the well-built closed room a steady current of fresh air in such a manner as will effect the required result. If, at the same time, we have supplied this outdoor air with adequate moisture on its ingress, we shall have fulfilled every condition provided only that we so deliver the air that it shall not create a draught. Various mechanical details may be adopted to accomplish this end, varying in accordance with the construction of a house, the amount of exposed surface, and so on; but if we have fully grasped the conditions required, it will not be difficult for one who has thoroughly grasped the needs to find some person of experience who will indicate the method of dealing with any particular situation.

COUNCIL MEETING.

A meeting of the Council was held on April 29th in the Carnegie Library. The members present were: The President, Mr. A. E. Attwood, Rev. C. G. Eifrig, Miss Q Jackson, Messrs. A. Halkett, A. Gibson, C. H. Young, J. M. Macoun, L. H. Newman and T. E. Clarke.

The following were elected ordinary members: Mr. T. E. Perney, B.A., Mr. F. C. Poole, Miss L. M. Ross and Miss A. Johnstone.

The President was appointed the Club's delegate to the meeting of the Royal Society of Canada.

The President reported having made arrangements to secure 500 copies of the Evening Journal containing the special article on The Ottawa Field-Naturalists' Club. It was decided that members of the Council be given what copies they might require to be used in a canvass for membership, and that the remainder be placed in charge of the Librarian, Mr. Young, from whom members of the Club could obtain copies.

REPORT OF THE ENTOMOLOGICAL BRANCH, 1907

(Read before the Club, January 21st, 1908).

The Leaders of the Entomological Branch have again pleasure in reporting that many of its members have been actively engaged during 1907 and that much useful work has been done, even although the season, from an entomological standpoint, was a very poor one. In the Ottawa district, the local members have assiduously continued their studies and many new records have been made of insects not hitherto found in the vicinity. Special attention has been devoted to the moths and butterflies, dragonflies, bees and the true bugs, as well as to the spiders. The beetles and flies have also been worked to a less extent. Large collections of Ottawa dragonflies have been made and these are being worked into a paper for *The Ottawa Naturalist* by Dr. E. M. Walker, of Toronto, with the special object of encouraging and helping our local collectors to devote more study to these important insects.

The fortnightly meetings of the Branch were continued in 1907, and these gatherings proved, as in the past, of much benefit and interest to those who attended them. Much valuable information is brought out in the discussions at these meetings which otherwise would be lost to the members.

During the past summer some of the members of the Branch had the pleasure of enjoying the visits to Ottawa of two distinguished entomologists from the United States. In June, Mr. W. D. Kearfott, of Montclair, N.J., the well-known specialist in microlepidoptera, who has identified so many local species, spent a week in Ottawa, and, with some of the members, made several expeditions to localities recognized as being within the area known as the Ottawa District. Special trips were made to Meach Lake and the Mer Bleue and hundreds of specimens of desirable material were collected. Mr. Kearfott is working up the species taken while here, and a paper treating of these will, we hope, soon be ready for publication. Almost following Mr. Kearfott's visit, Dr. Henry Skinner, of Philadelphia, one of the leading American authorities of diurnal lepidoptera, arrived in Ottawa for a short stay and met some of the members of the Branch.

During the year, six of the local members made special collections of insects at different points in Canada. Dr. Fletcher, with Dr. Skinner, travelled through Manitoba and the Northwest in July and August, and specimens in all orders were taken, at Nepigon, Ont., Aweme, Man. (the home of our

esteemed member, Mr. Norman Criddle), Rudy and Radisson, in Saskatchewan, and at Edmonton, Calgary, Banff and Laggan, in Alberta. While along the line of the Canadian Northern Railway they were accompanied by Mr. T. N. Willing, of Regina, an enthusiastic naturalist and member of the Club. Mr. Andrew Halkett, while making special collections of the fishes of the Northwest for the Alberta and Saskatchewan Governments, devoted some time to the collection of insects of the Beaver Lake and Qu'Appelle Lakes districts. Mr. Arthur Gibson spent the first three weeks of September at Rostrevor, Muskoka, and, although late in the season, fair collections of the insects of the immediate neighborhood were made and some records added to the Canadian list. Our President, Mr. W. J. Wilson, again visited the Hudson Bay Slope and, as in past years, notwithstanding the pressing nature of other duties, collected some insects in various orders which included several records of scientific interest. Mr. Joseph Keele, of the Geological Survey Department, who has again been exploring in the Yukon, along parts of the Stewart and Pelly Rivers, has sent back a few specimens of lepidoptera, every one of which is of scientific interest, as exact data are given with regard to the dates and localities. Mr. D. H. Nelles, of the Alaska Boundary Survey, made a small collection of beetles and butterflies at Bartlett Bay, off Glacier Bay, Alaska.

In May last our Honorary Member, the Rev. G. W. Taylor, while attending the meetings of the Royal Society of Canada, identified many geometrid moths for our local collectors and also attended the spring excursion of the Club to Beaver Meadow. Mr. Taylor, who is the leading North American authority on the Geometridæ, has published the descriptions of many species during the year, and has been a great help to Canadian students in identifying their material.

Mr. J. B. Wallis, one of the Winnipeg members, made large collections of coleoptera and lepidoptera at Banff, Alta., and Peachland, B.C. All of Mr. Wallis's collections have not, as yet, been worked over, but these are now being studied and lists will soon be prepared. Several very interesting captures were made at the above localities which have considerably extended the known distribution of some species.

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

LEPIDOPTERA:—

Cinclidia harrisii, Scudd. Blackburn, June 28, July 5, (Young). First records for the district.

Pamphila palæmon, Pallas. (*Carterocephalus mandan*, Edw.) Eastman's Springs, June 19, several specimens (Gibson and Young). The only previous record for the district was of a single specimen taken in the same locality some years ago by Dr. Fletcher.

Ampelophaga versicolor, Harr. A perfect specimen of this rare hawk-moth was taken at the Power House on the Britannia Electric Car Line, on Aug. 18, (Baldwin).

Sphinx canadensis, Bdv., July 6, (Baldwin). A very rare species.

Apantesis virgo, L. var. *citrinaria*, N. & D. A fine specimen of this rare variety, which has yellow hind wings instead of red, was taken on Aug. 4 by Mr. Baldwin. This is the first record of the variety having been taken at Ottawa. In a paper on the Genus Apantesis in the CANADIAN ENTOMOLOGIST, May, 1903, the only Canadian record then known was of two specimens which had been reared from larvæ at Hamilton, by the late Mr. J. A. Moffat.

Apatela radcliffei, Harvey. Mature larva found on apple, Sept. 26, (Létourneau). The species is rare at Ottawa.

Apatela funeralis, Grt. Bred from larva found on maple, June 10, (Young). Dr. Fletcher had previously reared the moth from a larva found on birch. Other food plants are hickory, elm and apple.

Apatela retardata, Wlk., June 16, (Fletcher). June 12, (Gibson).

Gortyna immanis, Gn., Sept. 14, (Fletcher). This interesting species has not been found at Ottawa for some years.

Papaipema pterisii, Bird. In last year's Report this insect appeared under the name "*Papaipema harrisii*, var." but Mr. Bird has since decided that it is not a variety of *harrisii*, but a new species, and has described it under the above name. The larva has been found in the bases of the fronds of the Common Brake, (*Pteris aquilina*).

Hydriomena contractata, Pack., Ottawa, 10 Sept., (Fletcher). Only two or three specimens of this geometrid moth have been taken at Ottawa.

Phlyctænia acutella, Wlk. A specimen of this rare pyralid was taken by Mr. Young. Mr. Metcalfe took a specimen at Toronto some years ago.

Enarmonia americana, Wlsm. June 11, (Gibson). A handsome little species not taken here before.

Sparganothis flavibasana, Fern. The larvæ of this tortricid

were abundant in the arboretum of the Central Experimental Farm, on *Lonicera japonica*. Moths reared from larvæ emerged on July 2 to 6. The insect is rare in collections, and has never before been found at Ottawa.

Depressaria sabulella, Wlsm. In house, April 16, (Gibson). A new record for the district.

COLEOPTERA:—

The following are a few records of beetles taken:

Hydaticus stagnalis, Fab. In moss, (H. M. Ami). Mr. Harrington has only twice found the species at Ottawa.

Harmonia picta, Rand. On larch, Sept. 1, (Fletcher).

Ligyrus relictus, Say. One specimen at Meach Lake, (Fletcher). Rare at Ottawa, but found in considerable numbers by Mr. Gibson at Rostrevor, Ont.

Lixus concavus, Say. Three specimens found on *Polygonum pennsylvanicum*, (Young.) First Ottawa records.

Otidocephalus chevrolatii, Horn. Meach Lake, Aug. 1, (Young).

Orchestes rufipes, Lec. This rare little weevil was very abundant and destructive to willows at Ottawa in September, the larvæ mining in the leaves, and the mature beetles eating out the surface in a similar way to flea-beetles. (Fletcher).

Merium proteus, Kirby. A specimen of this longicorn, which is very rare at Ottawa, was taken on June 28, by Mr. Ernest Guignard.

HYMENOPTERA:—

Pamphilius ruficeps, Hargtn. May 31, (Harrington).

Ichneumon milvus, Cress. Meach Lake, Sept. 1, (Fletcher). One of our rarest ichneumons.

Psithyrus laboriosus, Fab. April 26, (Fletcher).

Collections of Canadian Bombi have recently been kindly determined by Mr. H. J. Franklin, of Amherst, Mass., and among the species of local interest, the following are mentioned:—

Bombus impatiens, Cress. Oct. 2, (Fletcher).
Bombus pennsylvanicus, De G., (Fletcher).
Bombus perplexus, Cress. Meach Lake, July 20, (Gibson).
Bombus vagans, Sm. Aug. 25, May 5, (Fletcher).

HEMIPTERA:—

Mr. Metcalfe has continued his studies of these insects, and among those recently determined by Mr. Van Duzee, of Buffalo, the following are of special interest.

Ceresa constans, Wlk., Hull, very local, but abundant on three special basswood trees, Aug. 25, (Metcalfe). A distinct and readily recognized species.

Pediopsis bifasciata, Van Duzee. Mer Bleue, on aspen poplar, June, a good species distinct from *trimaculata*, Fitch. (Metcalfe).

Peltonotellus histrionicus, Stal. Mer Bleue, August; the rare macropterous form of this nearly always wingless species. (Metcalfe).

Clastoptera proteus, Fitch. subsp. *nigra*, Ball. Mer Bleue, August. New to the Ottawa district. (Metcalfe).

ODONATA:—

As mentioned above, large collections of Ottawa dragonflies were made during the past summer. Among these were many species worthy of mention, but as Dr. Walker is working up this material, along with other collections previously made at Ottawa, for a paper for the Ottawa Naturalist, it has been thought best not to publish these records here, as they will all be included in Dr. Walker's article soon to appear.

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

MEETING OF THE ENTOMOLOGICAL BRANCH

Held on evening of February 23rd, 1908, at Mr. Gibson's house. Present: Messrs. Harrington, Young, Fletcher, Baldwin, Halkett, Metcalfe, Letourneau and Gibson.

Mr. Halkett spoke of his work during the past summer in the Beaver Lake and Qu'Appelle Lakes districts of the Northwest. Large collections of fishes were made for the Governments of Alberta and Saskatchewan, and while engaged in this work, some interesting insects were collected from time to time. Mr. Halkett showed three bottles containing specimens in fluid, which he had collected. Most of these were aquatic insects in an immature state. Some large curious larvæ of a Dytiscus was noticed, which had been collected at the same time and place as the perfect insects of *Dytiscus circumcinctus*. Dr. Fletcher stated that some of Mr. Halkett's captures were of interest and

were being recorded in the Entomological Record for 1907, which will appear in the annual report of the Entomological Society of Ontario for that year.

Mr. Létourneau showed inflated specimens of the larvæ of *Apatela radcliffei* and *Apatela interrupta*, both of which he had collected on apple. Mr. Young said he had found the larva of the former at Ottawa on Mountain Ash. A general discussion followed on the food plants of lepidopterous insects, and many interesting points were brought out.

Mr. Baldwin exhibited a case containing some rare captures which he had made during the past summer. The most interesting were *Sphinx canadensis*, *Ampelophaga versicolor* (a beautiful specimen), and *Apantesis virgo*, var. *citrinaria*. All of these had been taken at light.

Mr. Metcalfe showed a long series of the interesting little homoptera belonging to the genus Psylla. He stated also that unfortunately many of these, although clearly distinct, had never been named. In the meantime he was saving all he collected and taking careful notes as to dates, localities and food plants. He also showed a nice collection of Manitoba hemiptera which had been sent to him by Mr. Criddle of Aweme.

Mr. Harrington showed some acorns of Red Oak which had been collected when newly fallen in the autumn of 1906 at Kirk's Ferry, Que. He had found a large percentage of the fallen acorns infested by the galls of some cynipid. These fusiform whitish galls arose from the base of the nut and developed between the nut and the cup, generally protruding slightly above the cup and causing a marked depression in the nut. The majority of the infested acorns had only one or two galls, but some had as many as five. These greatly exhausted or perhaps destroyed the vitality of the nuts. He had not succeeded in breeding the gall-maker or in finding any reference to such a gall.

Mr. Harrington also exhibited a recent fascicule of the Genera Insectorum containing a monograph of the Trigonalidæ by Mr. W. A. Schulz. The forty-two known species of these interesting hymenoptera are divided into seventeen genera, and five sub-families are indicated. The distribution of the insects is world-wide, but they appear to be most abundant in Central and South America. Only one Canadian species is known which was collected in Vancouver Island by Rev. G. W. Taylor and was described by Mr. Harrington as *Trigonalis canadensis*. This species has been made by Schulz the type of a new genus Bareogonalos and with *B. Scubellaris* Cam. (Mex.) forms the sub-family Bareogonaloinæ. A specimen of the male was shown and attention called to the armed scutellum and other generic characters.

Dr. Fletcher exhibited a pair of the very rare *Neophasia terlooii*, Behr, which had been given to him with many other rare species by Dr. W. Barnes, of Decatur, Ill. An account was given of a most enjoyable day spent with Dr. Barnes at his home, in company with Dr. J. B. Smith and Mr. H. H. Lyman. Among other specimens shown were: A grand specimen of the Tarantula, *Mygale hentzii*, Girard, which had been presented to the Division of Entomology by Mr. W. Bremner and was found in the building of the Ottawa Fruit Exchange. It had doubtless been imported with fruit from the south. This specimen measured over 6 inches from tip to tip of the outstretched legs, and the body was nearly 2 inches long. Some specimens of both sexes of the interesting little *Boreus californicus* which had been received in a living condition from Mr. J. W. Cockle, of Kaslo, B.C. A fine specimen of *Cyphoderris monstrosa*, Uhler, from Peachland, B.C., a new locality where it was discovered during the past summer by Mr J. B. Wallis of Winnipeg. A pair of the very handsome Scarabæid beetle *Plusiotis gloriosa*, Lec., from Dr. Henry Skinner of Philadelphia, who had collected them himself in the Huachuca Mountains of Southern Arizona. Five specimens of *Pontia napi*, L. var. *b. hulda*, Edw. which were taken by Mr. Douglas H. Nelles, on the 10th of June last at Bartlett Bay, off Glacier Bay, Alaska. Male and female specimens of the Brown-tail Moth, which had been reared in the Entomological Division from young larvæ collected in Nova Scotia last spring. Dr. Fletcher also exhibited for comparison a specimen each of *Belostoma americanum* and *Benacus griseus*. He pointed out the difference in the front pair of raptorial legs, but was unable to see why it had been considered necessary to put these two insects into different genera.

Mr. Young showed two beautiful cases illustrating the life histories of *Samia cecropia* and *Tela popyphemus*, Cram. These artistic cases were much admired by all present.

Mr. Gibson showed a selection of species from a collection of insects of all kinds which he had made at Rostrevor, Ont., on Lake Rosseau, Muskoka, last September, and spoke on the rare or more interesting species taken. He mentioned that he was preparing a list of the species of lepidoptera collected.

A. G.

REPORT OF THE ORNITHOLOGICAL BRANCH, 1907-08.

The Ornithological Branch of the Ottawa Field Naturalists' Club met during the year 1907 at more or less irregular intervals. It has carried forward the work of rendering complete and up-to-date the local list of birds. Field work was carried on, especially so during the spring and migration months of last year. The spring migration of birds of 1907 was found here, as over practically the whole eastern half of North America, to have been very abnormal owing to the protracted cold weather of that spring. These variations in temperature, etc., render the migration of birds doubly interesting to the observer, as there are no two migrations quite alike. An account of the last spring migration was published in the "Ottawa Naturalist" in the May and August numbers. Other facts concerning the birds hereabouts have been published from time to time. An interesting specimen has lately come into the hands of one of our members, namely, a Great Horned Owl (*Bubo virginianus*) from Inlet, Labelle Co., Que. In plumage it is a much lighter one than those found here usually are, and it furthermore bore very palpable evidences of having, shortly before it was shot, engaged in a fight with a porcupine. It was liberally sprinkled over with quills, especially in the sole of the right foot, the quills having penetrated even that horny and hard skin, also under the right wing, on the breast, neck and even two in the left eye-lid. Some of the quills had penetrated the thick solid muscles of the breast, lying against the sternum. Fifty-six quills and parts of quills were extracted from the skin and flesh and about 10 more were left in. How did this owl come to tackle such an undesirable antagonist or prey? The probability is that the owl was foraging for food, and being very hungry—which is a common occurrence for them in winter—she swooped down on the first moving object that even remotely appeared like legitimate prey and in her eagerness, and possibly by reason of the darkness of the woods, did not find out her mistake until she had reached forward with one claw and gotten that full of spines and simultaneously receiving a slap from the tail of the porcupine that lodged the rest of the little barbed spears in her anatomy. Most of the hawks and owls which we receive here in winter have empty stomachs, showing that hunger must be a very frequent, if disagreeable experience with them. It also seems that at such times the gall discharges very copiously into the stomach, as the stomachs in such cases are always very green, as are also the intestines. Probably a way nature adopts to relieve the pain of hunger somewhat.

Now, a few recommendations. We would urge such as take

an active interest in birds and their study to send in their names and addresses to Mr. A. G. Kingston, 241 Nicholas St., so that our section would become larger and more efficient, and so that our meetings could be held with greater regularity, which is now precluded by the preoccupation of other duties on the part of its members.

Then, we would urge all members of the Field Naturalists' Club to look upon themselves as protectors of birds at all times and wherever they are. Let them hinder wanton destruction of bird life whenever a chance offers, and instill into others, especially children, a sympathetic interest in birds, which, in the end, is the best safeguard of birds.

At the same time other enemies of birds must be kept in check. According to systematic investigations of the Massachussetts Board of Agriculture, the domestic cat is one of the worst foes of birds. The cat should, therefore, be kept in the house, especially in the outlying portions of the city and on the farm, particularly at the nesting time, and if a cat is found to have acquired the habit of killing birds, the best remedy is to forever put the cat out of harm's way. In Germany some cities, having many parks, have during several years past employed regular cat-catchers, who manage to take in from 10 to 15,000 cats in one city. These are then so dealt with that they can no longer kill birds. A good precedent to follow.

Much can also be done in the way of protecting and increasing the numbers of birds by people having gardens, or farms, or at least a number of trees around their houses, by putting up nesting boxes. These should be made so as to be acceptable to wrens, bluebirds, swallows, etc. They should be made accessible to people, so that the nests of the house sparrow can from time to time be destroyed.

Let us do all we can to protect the birds, these useful and beautiful helpers of man in the economy of nature, and to increase their numbers.

The Ornithological Section,

G. EIFRIG,

A. G. KINGSTON.

EXCURSIONS.

Heavy rain made it necessary to cancel the first excursion of the season which was to have been to Rockliffe. The following Saturday, however, May 2nd, though the weather was threatening, a surprisingly large number of members and friends of the Club went to Beechwood. Owing to the lateness of the season, none but the very earliest of the Spring flowers were found, and for the same reason the insects seen were few in number. Mr. Eifrig, who led the ornithologists, recorded 21 species of birds and noted their numbers. They were: One brown creeper, about 50 bronzed grackles, 10 red-winged blackbirds, 5 chipping sparrows, 2 kingfishers, 5 crows, silent and breeding, 5 song sparrows, about 75 tree swallows, 2 meadow larks, 25 robins and one nest with 2 eggs, 2 bluebirds, 1 flicker, 5 juncos, 25 golden-crowned kinglets, 1 cowbird, 1 downy woodpecker, 1 bittern, 4 myrtle warblers, 1 purple finch, 3 bluejays and 2 white-throated sparrows. Under stones, bark and pieces of wood some beetles and hymenopterous insects were collected. The former were common ground beetles which may generally be collected in such places at this time of year. A large number of Halisidota were noted under stones and some millipedes and spiders were collected by the entomologists. A fine *Lycosa* was found by Mr. Letourneau. These stout, hairy spiders, popularly known as "running spiders", make conspicuous holes in the ground in which they live. Two specimens of a salamander (*Plethodon erythronotus cinereus*) were collected.

Those interested in geology examined the Utica shales along the road leading to Beechwood and in the woods north of the road, but no fossils were found. Keefer Bluff, at the entrance to Beechwood, was next examined and here a number of fossils were collected by different members of the party. These limestones are of the Black River formation which produces excellent stone for building purposes. The characteristic coral *Tetradium fibratum*, was found in abundance.

The succession here, if complete, would be in ascending order, Black River, Trenton and Utica, but the Utica is really lower than the Black River, though originally there were 600 feet or more of Trenton limestone between them. The present condition was brought about by a fault or break which has caused the Trenton and Utica to sink down about 700 feet.

About 5 o'clock the excursionists met at the entrance to Beechwood Cemetery where short talks were given by Messrs. Attwood, Halkett, Eifrig and Criddle.

J. M. M.

The Ottawa Field-Naturalists' Club, 1908-1909

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