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Editor:

ARTHUR GIBSON,
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Associate Editors:

DR. H. M. AMI, <i>Geology.</i>	PROF. E. E. PRINCE, <i>Zoology.</i>	W. T. MACOUN, <i>Botany.</i>
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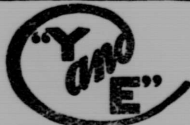
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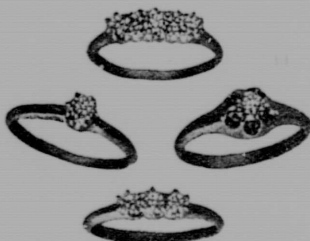
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THE OTTAWA NATURALIST

VOL. XXIII.

OTTAWA, OCTOBER, 1909

No. 7

NOTES FROM THE HERBARIUM OF THE GEOLOGICAL SURVEY OF CANADA.

BY JAMES M. MACOUN.

ARABIS WHITEDII, Piper, Bull. Torr. Bot. Club, xxviii: 39.

Near Sidley, west of Midway, B.C., 1905. Herb. No. 70,820. (*W. Spreadborough*). New to Canada. Only flowering specimens were collected and these in general appearance resemble *Lesquerella* rather than *Arabis*. Determined by Dr. Greene.

LEPIDIUM CAMPESTRE, (L.) R. Br.

Becoming common in Eastern Canada, especially in Ontario. Collected at Lower Montague, Prince Edward Island, by Mr. Geo. A. Amear.

SPIRÆA PYRAMIDATA, Greene, Pittonia II: 221.

S. Douglasii, var. *Nobleana*, Can. Rec. Sci., 1895, p. 3.

The plant which was referred above by the writer to *S. Douglasii*, var. *Nobleana*, proves to be *S. pyramidata*. It was collected at Sicamous, B.C., by Prof. Macoun. A single bush over five feet high of what is doubtfully referred here was found growing along the trail near Lake House, Skagit River, B.C., by J. M. Macoun, June 27, 1905, No. 69,957. The flowers were too immature for definite determination, but unless a hybrid between *S. lucida* and *S. Menziesii*, both of which grew near, it is probably this species. Spreadborough in 1906 found a bush in flower at 4,500 ft. alt. near Chilliwack Lake, B.C., No. 72,872, and again with *S. lucida* and *S. Menziesii* which makes it more probable that this white-flowered bush is a hybrid.

SPIRÆA DENSIFLORA, Nutt.; Torr. & Gray. Fl. I: 414.

S. betulifolia var. *rosea*, Gray.

S. arbuscula, Greene.

Recorded from the Seikirk Mts., B.C., by many collectors. Not rare in the Chilliwack Valley, B.C., between 4,000 and 6,000

feet altitude, Nos. 34,822, 34,823; abundant at 5,000 feet altitude on one mountain near the second summit west of Skagit River, B.C., No. 69,949. Not seen elsewhere in the Skagit Valley. (*J. M. Macoun.*)

SPIRÆA DOUGLASHII, Hook.

Abundant at Chilliwack, B.C., No. 34,819, and Sumas Lake, B.C., No. 34,820. (*J. M. Macoun.*) Not before recorded from the B. C. mainland.

PETASITES DENTATA, Blankinship, Mon. Agr. Coll. Sci. Stu. I: 64.

P. sagittata, Macoun, Cat. Can. Pl. I: 260 in part.

Long separated from *P. sagittata* in our herbarium but without a name. The shape of the leaf is intermediate between those of *P. palmata* and *P. sagittata*. Pursh described the radical leaves of *P. sagittata* as being "oblongis acutis sagittatis integerimus, lobis obtusis." The specimens he saw were from Hudson Bay. Gray in order to include western specimens changed the description of the leaves to "deltoid-oblong to reniform-hastate, from acute to rounded-obtuse, repand-dentate." A common species throughout the prairie region extending west at least to the Rocky Mountains. In British Columbia it is replaced by *P. speciosa*. Dr. Greene, (*Leaflets* p. 180), described a plant collected by Prof. Macoun at Emerson, Man., in 1880, (Herb. No. 72375), calling it *P. vitifolia*. The configuration of the leaf is quite unlike that of any of the specimens referred to *P. dentata*.

VERNONIA CORYMBOSA, Schweinitz.

Damp prairies, near Morris, Man., Aug. 8th, 1906, No. 23,104. (*John Macoun.*) Not before recorded from Canada. Vernoniae are abundant in southwestern Ontario and from that region we have specimens which have been referred to *V. gigantea*, *V. fasciculata* and *V. Drummondii* and what appear to be typical plants of all three are in our herbarium, but other specimens cannot certainly be determined so that they cannot yet be recorded.

DISCOURSES UPON THE LEPIDOPTERA.
I. VARIATION.

BY F. H. WOLLEY-DOD, MILLARVILLE, ALTA.

In Europe, more particularly in the British Isles, species of lepidoptera are less frequently confused, and variation far better understood, than on the North American continent. Many of

the reasons for this are obvious. Collecting dates back to much earlier times, and a very large proportion of existing species have been repeatedly bred. Not only is the population far greater than in this country, but the proportion of collectors amongst them is greater also. The latter fact is perhaps due to hobbies being more encouraged, and more people having leisure and opportunities for their pursuit. Access to the best named collections is easier, and there are far more well illustrated books on the subject. From all this it follows that there is a wider interest taken in the study of lepidoptera by those who have a taste for the science, and there is less diversity of opinion as to correct names. On this continent the scarcity of illustrated literature, and difficulty of getting any expert opinion at all, owing to the distances which specimens have to be sent, at considerable risk and trouble, is in itself some deterrent to the few interested, not to mention the time which must elapse before receiving any opinions at all, the difference of opinion received from different quarters, or at different times from the same quarter—it may be even on the same specimen—besides the toll sometimes levied for opinion given, all tend in some degree to discourage the hobby.

The variation in some well known European species of lepidoptera has, by careful breeding from known parents, been proved to be enormous. Some closely allied species which may perhaps be almost exactly alike, show certain slight points of difference which neither ever exceed. In other instances, the prevailing forms of two species may be entirely dissimilar, yet one or both may ordinarily develop varieties looking, to the untrained eye, not only exactly like the other, but like several other usually quite dissimilar species. In a country like England it is rarely that a specimen is found which cannot be recognized by an expert as a known form of some species, notwithstanding its greater resemblance in very many points to other species. It sometimes happens that a species does not possess any characters, whether of color, individual markings, or even shape of wing, which do not vary to apparently well within the limits to which other species extend. Particularly is this the case in the genus *Euxoa*, or *Paragrotis*, as some authors call it. In general, however, such species have, to those familiar with them, something by which the relationship may be correctly discerned, it may be either by a character, or combination of characters, or by the general appearance so confusingly like, yet, in some indefinable way, as a whole, disassociable with, another species. Yet occasionally specimens occur which puzzle even those who know the species best.

A special study is made by many European collectors of local variation. Some species seem to appear in the same form wherever they exist, scarcely varying at all in any essential

characters, either in any one locality, or differing in one locality from another. Such are called constant species. Others may be very constant in any one locality, yet appear in more or less modified forms in different localities, according to geographical, geological, or climatic conditions. Others may be constant in one locality, but show considerable range of variation in another; or may vary to a greater or less degree towards a certain form in one place, and towards quite a different form in another. But few that vary at all in any locality, vary to the same degree, or within the same limits wherever they occur. In short, whilst some species do not vary to any extent anywhere, others seem, as it were, to lend themselves enormously to local variation. In some instances difference of food-plant is accountable in a great measure for variation in size and color, and it has been observed that the fact of a larva confining itself to different food-plants in different parts of the country does not necessarily indicate different species. Breeding, and careful records of early stages, have often resulted in a distinct specific relationship having been traced through between forms presenting somewhat striking differences in different habitats, which might otherwise easily have passed as distinct species. The expression "specific relationship" must not be taken to mean positive "specific identity," as the legitimate use of that expression will depend on the concise meaning attached to the word "species," briefly discussed in a previous paper.

Some species have seasonal varieties, that is, they pass through their entire metamorphoses more than once a year, and the different breeds assume different characters, according to the season or length of time spent in larval and pupal stages. Others show dimorphic variation, sometimes in one sex, sometimes in both. That is to say, two different forms, suggesting two species, can be bred from the same batch of eggs, even without any actually intermediate form appearing at all. And this may occur regularly in some localities, never in others. In both the foregoing instances, as in many others, unfamiliarity with the species concerned has resulted in the separation of what are merely varieties into species. In some years too, a species shows a stronger tendency to a certain form of variation than in others.

A species varying differently, or appearing under a modified form, in different localities, is said to exist in those localities in the form of a "local race," which is sometimes referred to, with doubtful justice, as an "incipient species." It is questionable whether a truly distinct species can ever be evolved whilst direct specific relationship can be maintained by interbreeding, on what may be called, for convenience, the confines of their range, or where the races meet. Complete isolation from blood relationship for a lengthy period under special conditions, is probably necessary before a race can be said to begin to exist

under a truly specialized form, i. e., pass from an incipient species to a "subspecies" and finally to a true "species" in its most exclusive sense.

BIRDS OF STONY PLAIN, ALBERTA.

BY SIDNEY S. S. STANSELL.

Name of Bird	When First Seen		Does it Breed	Remarks
	1908	1907		
Blue Jay.....	Jan. 1	Apr. 12	yes	Quite common.
Canada Jay.....	" "	" 1	"	Our most abundant Jay.
Hudsonian Chickadee.....	" "	" ?	"	Probably breeds.
Chickadee.....	" Apr. 1	" yes	"	Very common.
Western Great Horned Owl.....	" " June 19	" "	"	A great many.
Arctic Three-toed Woodpecker.....	" " "	" "	"	Common in early winter.
Gray-crowned Leucosticte.....	" " "	" no	"	Abundant winter resident.
Snow Bunting.....	" " "	" no	"	Abundant winter resident.
Pine Grosbeak.....	" " "	" "	"	Common in early winter.
Redpoll.....	" " Apr. 1	" "	"	Common during early winter.
White-winged Crossbill.....	" " July 30	" yes	"	Common.
Northern Hairy Woodpecker.....	" " "	" "	"	Quite Common.
Northern Downy Woodpecker.....	" " "	" "	"	These first 16 species are our
Yellow-bellied Sapsucker.....	" " May 26	" "	"	common winter residents.
Rough-legged Hawk.....	" " " 26	" "	"	
Canada Ruffed Grouse.....	" " Apr. 1	" "	"	
Saw-whet Owl.....	" " "	" "	"	One specimen taken.
Cedar Waxwing.....	Apr. 6	June 11	"	Quite common.
Mountain Bluebird.....	" 6	May 26	"	Common in settled parts.
Raven.....	" 6	Mar. 31	"	But one seen.
Goshawk.....	" 13	Apr. 18	yes	Not as common as formerly.
Canada Goose.....	" 13	" 10	no	Quite a common migrant.
Mallard.....	" 13	May 10	yes	Nest in upland, away from water.
Tree Sparrow.....	" 14	Apr. 28	no	Common in spring and fall.
Golden Eagle.....	" 14	" 1	yes	Several.
Robin.....	" 15	May 10	"	Very abundant.
Junco (J. hyemalis).....	" 16	" 10	"	Very abundant.
Redwinged Blackbird.....	" 16	" 10	"	Quite common.
Rusty Blackbird.....	" 16	" 10	"	Most common blackbird.
Bohemian Waxwing.....	" 18	June 1	"	Quite common.
Pintail.....	" 19	Apr. 28	"	Quite common.
Song Sparrow.....	" 19	May 20	"	Very numerous.
Lesser Scaup Duck.....	" 19	June 4	?	Not common.
Ring-necked Duck.....	" 19	May 26	"	Seen but once.
Killdeer.....	" 19	" 26	yes	Quite common.
Green-winged Teal.....	" 19	June 14	"	Quite common.
Wilson's Snipe.....	" 22	May 10	"	Nest with 4 eggs, May 24, 1908.
Yellowlegs.....	" 22	" 10	"	Quite common.
Sparrow Hawk.....	" 22	" 26	"	Quite common.
Spotted Sandpiper.....	" 22	" 26	"	Quite common.
American Goldeneye.....	" 24	" "	"	Very rare.
Tree Swallow.....	" 24	May 26	"	Quite common.
Bufflehead.....	" 25	" "	"	Quite common.
Wilson's Thrush.....	" 28	May 26	"	Probably the western form.
Loon.....	May 1	" 26	"	Quite common.
Western Red-tailed Hawk.....	" 1	June 14	"	But few seen.
Northern Flicker.....	" 1	May 26	"	Very common.
Phebe.....	" 1	" 26	"	Very few.
Northern Shrike.....	" 1	" "	"	Seen but once.
Marsh Hawk.....	" 1	" "	yes	
Richardson's Merlin.....	" 1	June 8	"	Seen but once.
Holboell's Grebe.....	" 1	May 10	yes	Very common.
Western Vesper Sparrow.....	" 4	" "	"	Very common.
White-throated Sparrow.....	" 6	May 26	"	Very common.
Bronzed Grackle.....	" 11	" 26	"	Quite common.
English Sparrow.....	" 11	" "	"	Common in towns only.
House Wren.....	" 11	May 26	"	Very numerous.
Brewer's Blackbird.....	" 11	June 14	"	Common at Edmonton; rare here.
Clay-colored Sparrow.....	" 11	" 1	"	Quite common.
White-crowned Sparrow.....	" 11	" "	no	Several in spring and fall.
Catbird.....	" 11	" "	yes	Very rare.
American Merganser.....	" 11	" "	"	Seen but once.

Name of Bird	When First Seen		Does it Breed	Remarks
	1908	1907		
Purple Finch	May 11		Yes	Quite common.
Philadelphia Vireo	" 11		"	Very rare.
Fox Sparrow	" 11		"	Our most beautiful sparrow songster.
Greater Yellowlegs	" 12		"	Quite common.
Western Meadowlark	" 12	May 20	"	Very common.
Eared Grebe	" 12	" 26	"	Very scarce.
Pipit	" 12	" 10	no	A migrant only.
Yellow Warbler	" 12	" 26	yes	Quite common.
Chipping Sparrow	" 12		"	Very rare here.
Sora Rail	" 12		"	Quite common.
Solitary Sandpiper	" 12		"	Nest with 3 young in old Robin's nest.
Ovenbird	" 14		"	About 40 to the square mile in the woods.
Least Flycatcher	" 14	June 11	"	Our most common Flycatcher.
Bittern	" 14	May 26	"	Quite common.
Gray Ruffed Grouse	" 15		?	But one seen.
Redstart	" 15	May 30	yes	Quite common.
Cowbird	" 15	" 26	"	Very numerous.
Rose-breasted Grosbeak	" 17	" 26	"	Very numerous.
Olive-backed Thrush	" 18	" 30	"	Our most common Thrush.
Grinnell's Waterthrush	" 18		no	Common in spring.
Red-eyed Vireo	" 18	May 30	yes	Our most common Vireo.
Savanna Sparrow	" 18	" 26	"	Quite common.
Louisiana Tanager	" 18		"	Found nest in 1907.
Cliff Swallow	" 18		"	Very numerous.
Nelson's Sparrow	" 20	June 3	"	Seen but once.
Canvas back	" 20		"	Seen but once.
Pied-billed Grebe	" 20	June 14	?	Seen but once.
Coot	" 20		yes	Breeds within a few miles of here.
Wilson's Phalarope	" 20		"	Seen but once.
Barn Swallow	" 20		yes	Quite common.
Little Brown Crane	" 20	June 19	?	Seen quite often, but breeding doubtful.
Western Grebe	" 24		"	Seen but once.
Kingbird	" 24	May 26	yes	Very common.
Virginia Rail	" 24		"	Not very common.
Broad-winged Hawk	" 27		"	Quite common.
Evening Grosbeak	" 27	May 31	"	Found nest; quite common.
Nighthawk	" 27	" 26	"	Very common.
Western Warbling Vireo	" 27	June 9	"	Set of eggs taken.
Black Tern	" 30	May 26	"	Very abundant.
Northern Yellow-throat	" 30	June 8	"	Quite common.
Baltimore Oriole	" 31	May 26	"	Common in more settled parts.
Macgillivray's Warbler	June 4		"	Not very common.
Bonaparte's Gull	" 15		"	Seen but once.
Redbreasted Nuthatch	" 17	June 19	yes	Saw but 3 during summer.
Pine Siskin	" 17	" 14	"	Probably nests here; are here all summer.
Bartramian Sandpiper	July 10	May 26	yes	Saw but one pair.
Kingfisher	" 10	" 26	"	Seen but once.
Humming Bird, sp. l.	Aug. 5	July 30	"	Seen but once.
Crow		Apr. 1	no	Rare.
Gray Gyr Falcon		" 8	"	Rare.
American Hawk Owl		" 18	"	Common.
Cooper's Hawk		May 10	"	Rare.
Wood Pewee		" 26	yes	Common.
Myrtle Warbler		" 29	"	Seen but once.
Gray-checked Thrush		June 1	"	Seen but once.
Goldfinch		" 4	yes	Common.
Blackpoll Warbler		" 9	yes	Common.
Magnolia Warbler		" 10	"	Common.
Horned Grebe		" 14	"	Common.
Arctic Tern		" 14	"	Common.
Golden-crowned Kinglet		" 19	"	One pair nesting.

This is a valuable avifaunal list, from a region from which lists are few and far between. That some species, given as common winter

residents are given so late for 1907 is owing to the fact that Mr. Stansell only arrived at Stony Plain about April 1st of that year. And if some birds marked as common have only been seen late in the year for the first time, that is no doubt due to the little leisure time that Mr. Stansell has from his work. That section is no doubt an interesting one from an ornithological point of view, as witness the breeding there of the Bohemian Waxwing, Evening Grosbeak, etc., and it is to be hoped that Mr. Stansell will hereafter regularly send in bird news to the NATURALIST and thus further elucidate the conditions of bird-life there. A number of the species enumerated in this list will eventually, no doubt, prove to be the western subspecies of the ones named, and perhaps Bonaparte's Gull will turn out to be Franklin's Gull.

G. E.

THE SO-CALLED WHITE WILD OATS AND WHAT THEY ARE.

BY NORMAN CRIDDLE, TREESBANK, MAN.

There has been considerable apprehension among farmers within recent years, through the discovery of white oats which resemble in their nature, or seed form, the wild species *Avena fatua*. These oats were first brought into prominence some two or three years ago by the different agricultural institutions of the country whose experts found it advisable, pending investigation, to class them as "wild oats" when judging grain for seed purposes, and to condemn the sample in which they were found. As this type of oats has become better known, and carefully looked for, examples have been found in nearly every variety of cultivated oats, and, as a matter of fact, there are probably very few that are entirely free from them, either black or white.

As the problem of what these oats were and how they were going to affect the interests of grain growers became a prominent one economically, and as it also became an interesting subject botanically, I devoted some time to it during the last three years with the result that I am now in a position to throw some light upon the question.

One of the first things that attracts attention to these so-called "white wild oats" is their close resemblance, in the seed form, to the variety from which they were selected. There is, however, one striking difference, namely, in every case the supposed wild oat, or as I shall term it in future, the sport, is always awned with a strong twisted black and white awn, and

*This does not refer to albino wild oats which can always be recognized by their close resemblance to the black ones.

it has also the horse-shoe shaped base so characteristic of *A. jativa*. Thus it resembles in colour, shape and size the variety from which it originated and in other respects the wild species, excepting that the basal hairs are absent or nearly so.

The growing plant is also an exact counterpart of its parent. Those selected from "Banner" oats have the spreading head, while the "Storm King" sports are side oats and show the strong stems and massive grains of that variety so that they could not be separated by the plants if it were not for the long awns sticking out of the head. I have not been able to examine many different kinds of oats but what I have gone over carefully—"Banner," "New Market," "Abundance," "Storm King" and "Bumper King"—have all contained some proportion of sports, "New Market" and "Storm King" showing the most.

It is interesting to note that these sports breed true to type apparently without exception, and further that absolutely pure seed is always liable to produce them, the parent from which they spring being easily recognizable in the offspring. There is one other feature of importance from an agricultural point of view, namely the retarded germination so characteristic of *A. jativa* is not a character of these sports, the germination being so far as experiments have shown in exactly the same proportion as the parent variety, so that the apprehension that they might become a bad weed seems to be groundless. Whether they will prove troublesome on account of their awns remains to be seen, but the chances are against this being the case, as sports have probably occurred for ages past in oats but have been overlooked.

It is difficult to arrive at a satisfactory theory as to the cause of these sports; but, granting that the original type, from which cultivated oats were first selected, was heavily awned and had the basal characters of *Avena jativa*, we might surmise that they are retrogressions in the features noted to the original progenitors of present day oats.

It seems strange, however, that this probable form of atavism should be active in all, or nearly all, breeds of oats and that both types—*A. sativa* and *A. orientalis*—should be equally active in producing sports.

I have not attempted to go into the matter of the true nature or cause of what I have termed sports in this paper, as to whether they have relation to the De Vries mutations, or whether any other facts or hypotheses are able to explain them. This is outside my province and may be safely left to men more capable of looking into such matters.

"SNOW-WORMS."

BY ARTHUR GIBSON.

An interesting occurrence of these so-called worms was brought to the writer's attention in February last. Mr. Lawrence W. Watson, of Charlottetown, P.E.I., sent to me some living specimens of coleopterous larvæ, with the statement that they were abundant in a field which was covered with ice of several inches thickness. In a second letter dated March 5th, Mr. Watson says: "I am now able to give you further particulars concerning the larvæ of which I wrote to you a short time ago. The first lot of specimens were collected on February 14th, February 11th, and 12th were fine, cold days. On February 13th we had a thaw followed by cold, and strong wind. February 14th was very cold. The second appearance was on February 23rd. On the 20th there was rain, but frost at night; 21st and 22nd were fine, cold days. On the 23rd it was cold and there were some snow flurries. Upon this occasion the larvæ were not so numerous. On the former appearance there were about two or three to the square foot of ground; upon the second occasion they were more scattered. To-day they are very numerous and occur more in bunches. March 2nd was mild with snow at night. The 3rd was fairly mild; yesterday we had a "silver thaw." To-day it is mild. In every case the larvæ were found in fields and 50 or 100 yards from trees. They were not seen on bare ground, always on ice or snow of a depth of two to six inches. To-day they are very active on snow."

Some of the larvæ sent by Mr. Watson were forwarded to Dr. L. O. Howard, the United States Entomologist, at Washington, D.C. As Dr. Howard's letter in reply gives much interesting information I quote it in full:—

"The larvæ sent by you with your letter of February 26th, and which were found alive on ice at Charlottetown, Prince Edward Island, are what are known as 'snow-worms.' These are the larvæ of the Lampyrid (Telephorid) genus *Telephorus*, commonly called soldier beetles. They hibernate in the ground among the roots of grasses and when, in wintertime, a peculiar combination of climatic conditions prevails—melting snow, the ground soaked with water, the temperature above freezing point—the larvæ appear above ground, often in enormous numbers of specimens, and crawl about on the surface of the snow. Such climatic conditions, however, do not occur every year, and consequently the interesting phenomenon of seeing multitudes of snow-worms is by no means a common one. However, single specimens of *Telephorus* larvæ may be seen every year on the surface of snow.

"The snow-worm in the vicinity of Washington and at Detroit, Mich., is the larva of *Telephorus bilineatus* which is also a common species throughout Canada. You will find figures of both larva and imago of this species in Riley's Fourth Missouri Report, page 29. The genus *Telephorus* contains many closely allied species and it is possible that some of them may have the same habit as *T. bilineatus*."

Occurrences of Telephorid larvæ on snow, similar to the above, have occasionally been recorded in the United States. Dr. Lintner, the late State Entomologist of New York, in his Eighth Report (1891) refers to a remarkable appearance of the larvæ of *Telephorus* which were thought to be the species *bilineatus*. In this instance the larvæ occurred at Center, N.Y., in millions about February 10th during a rain. The snow was literally alive and black with the "worms" for a distance of about half a mile long and about twelve rods wide, while beyond this strip the larvæ were abundant in every direction, but to a less extent. They were active on the snow for a few days. In the article on these insects Dr. Lintner says: "The explanation of the larvæ appearing on the snow would be, that they were drawn from the ground by the (warm?) rain, and with the change of rain into snow, they continued, with its increasing depth to mount to the surface, as other larvæ have been known to do."

Telephorus bilineatus is a common northern species, and it is most probable that the larvæ which were noticed on Prince Edward Island were of this species. The larva of *T. bilineatus* is of a rich velvety-brown colour; the body is narrowed at each end, and the segments are distinctly divided. The late Dr. Riley in the report referred to above, by Dr. Howard, treats of this insect as an enemy of the Codling Moth, one of the worst pests of the apple grower. It is also a well known enemy "of the larvæ of the Plum Curculio, when these enter the ground to pupate."

The Telephorids belong to the family Lampyridæ, known popularly as the fire flies which are familiar to almost everyone. Kellogg, in "American Insects," writes of the Lampyridæ as follows: "The light-giving organ is usually situated just inside of the ventral wall of the last segment of the abdomen, and consists of a special mass of adipose tissue richly supplied with air-tubes (tracheæ) and nerves. From a stimulus conveyed by these special nerves oxygen brought by the network of tracheæ is released to unite with some substance of the adipose tissue, a slow combustion thus taking place. To this the light is due, and the relation of the intensity or amount of light to the amount of matter used up to produce it is the most nearly perfect known of physicists."

THE TRAGIC SIDE OF BIRD LIFE.

BY H. GROH, OTTAWA.

Poetry and song are full of the idealization of bird life; but even bird life has its stern realities. The following notes are gleaned from my field journal for the nesting months of May and June, and include all the nests which came under my observation during that time, in one small swamp within the city limits. Their significance, as bearing upon the small tendency toward increase of our native songsters, is sufficiently apparent without comment.

May 18. Black and White Warbler nest-building. Carrying dead grass into a hole at base of a rotten stump.

May 20. Robin's nest with eggs, in crotch of a tree in full view of public road.

May 24. Robin's nest empty.

May 25. Black and White Warbler's nest contains first egg.

May 26. Song Sparrow's nest with five eggs.

May 28. Song Sparrow's nest disturbed and eggs gone.

May 31. White-throated Sparrow's nest, containing four eggs, one of them a Cowbird's.

June 2. Nest of Wilson's Thrush containing three eggs.

June 2. Black and White Warbler's nest has now five eggs. By some accident the rotten side of the stump had got crushed down in such a way as to block the entrance to the nest, so that yesterday morning the bird was unable to enter. Cleaned it away, and find this morning that she has returned.

June 3. Nest of Wilson's Thrush torn from its place on a grassy mound, and eggs gone.

June 7. Black and White Warbler's nest found to have been torn out, and eggs missing.

June 7. The White-throated Sparrow has hatched the Cowbirds' and one of its own three eggs. The other two remain in the nest, apparently worthless. The Cowbird distinctly the larger nestling.

June 12. Cowbird in White-throated Sparrow's nest has so monopolized the attention of its foster parents, that it is now fully again as large as their rightful nestling.

June 19. White-throated Sparrow's nest deserted, but after a minute or two the parent birds appeared in the trees above the nest, and by their chirping showed signs of concern. No sign of either young bird.

This last entry completes the history of the nests discovered in this swamp, with the single exception of one belonging to a pair of crows, whose young on June 12 had so far escaped the fate of the other birds, as to be trying their powers of flight.

NOTES ON THE BIRDS OF DURHAM, ONT.

BY W. E. SAUNDERS, LONDON, ONT.

The following observations were made during a brief visit at Durham, covering the 20th to the 22nd of June, 1909, during which time I stayed with Mr. William Mountain, who lives two miles south of the village, and from whom I received valuable information regarding some of the species. Interesting memoranda were also received from Mr. Chris. Firth, who resides about two miles east of Durham, where he has lived for a number of years.

Durham lies about 28 miles south of the Georgian Bay and about 40 miles east of Lake Huron. The latitude of Durham is about $44^{\circ}25'$, and the elevation is 1,500 feet, or about 900 feet above the lake. The tree growth consists largely of hardwoods, such as maple, elm, oak, and beech, while the conifers are chiefly balsam, cedar, and hemlock.

From a visit of such short duration it would be impossible to give a list of the birds of the vicinity, so I will limit my notes to those that are deemed of special interest:—

Bob White; formerly rare, but now extinct; the last one was seen about 10 years ago.

Dove; rare, only one seen.

Goshawk; prior to 20 years ago this bird bred in the country immediately around Durham, but was not known to do so at present by my informants.

Black-billed Cuckoo; moderately common, but the Yellow-billed has not yet appeared. In 1900 I saw two near Warton, but in my previous journeys into the North Bruce Peninsula, it was not observed.

Red-headed Woodpecker; rare.

Bob-o-link; rather rare.

Meadowlark; common.

Cowbird; rather rare.

The total number of the various sparrows observed is as follows, arranged in order of abundance:—

Vesper.....	130	Savannah.....	21
Chipping.....	80	Swamp.....	18
Song.....	75	Junco.....	18
Goldfinch.....	38	Chewink.....	12
Indigo.....	38	Purple Finch.....	8
White-throated.....	36	Rose-breasted Grosbeak..	4

Mr. Firth told us that the Chewink had arrived about 1905. but was not observed previously. I saw two of these birds

near Warton in 1888, one in 1889, and noted it on four successive days in 1900 all over the base of the Peninsula.

The Tree Swallow is surprisingly rare, only one specimen having been seen. The diminution in the number of this species in Western Ontario is very striking, not a single pair having been observed during the nesting seasons of 1908 or 1909 near London. In the Peninsula they were abundant in '87, '88, and '89, but in 1900 most days revealed only two birds.

Rough-winged Swallow; we were surprised to find two pairs of these birds nesting in a cut bank in the village of Durham.

A single Warbling Vireo was noted in the village, but no Yellow-throats or Blue-heads were seen.

The following warblers were noted in the numbers given, the order being that of abundance as before:—

Black-throated Green.....	25	Chestnut-sided.....	7
Black and White.....	18	Ovenbird.....	7
Yellow.....	14	Redstart.....	7
Canada.....	13	Blackburnian.....	5
Water Thrush.....	11	Mourning.....	5
Black-throated Blue.....	10	Nashville.....	5
Maryland Yellow-throat..	7		

Brown Thrasher, of which two or three specimens were seen and heard, was said by Mr. Firth to be a new arrival, never having been observed before the present year, although I have noted it in small numbers, spread well over the Bruce Peninsula where the elevation is about 600 feet.

The common Thrush was the Veery, but we heard also two Hermits and a single Wood Thrush. The Alder, Olive-sided and Least Flycatchers were all rare, Crested, Wood Pewee and Kingbird being the common ones.

PERSONAL.

Members of the Club and friends of the late Dr. Fletcher will be interested to know that the Division of Entomology and Botany of the Dominion Experimental Farms, over which he was for so many years the head, has now been separated into two distinct Divisions, viz., the Division of Entomology and the Division of Botany. The position of Entomologist has been given to Dr. C. Gordon Hewitt, and that of Botanist to Mr. H. T. Gussow, F.R.M.S. Both of these gentlemen have now arrived at Ottawa and are at present busily engaged in connection with the work of their respective Divisions. Dr. Hewitt was formerly Lecturer in Economic Zoology, University of Manchester, Manchester, England, and Mr. Gussow, Assistant to Dr. William

Carruthers, the eminent British botanist. We are very glad indeed to welcome both of the above gentlemen to Ottawa. The Ottawa Field-Naturalists' Club will doubtless receive much benefit from their presence.

In the removal of the Rev. G. Eifrig from Ottawa to Addison, Ill., the Club has lost from the ranks of its active members a most valued officer and leader. From almost the first day he came Mr. Eifrig took a deep interest in the work of the Club. As an ornithologist of recognized standing, he was a welcome addition to our Society, and during his stay with us he did splendid work in encouraging the study of local birds. His papers in the OTTAWA NATURALIST have given much pleasure to our readers and we shall certainly miss his kindly face and interesting talks at our excursions in the field, and at our meetings during the winter months. He has been a faithful member of the Council of the Club, being at the present time the 2nd Vice-President and Chairman of the Excursions Committee. As a true and enthusiastic student of bird life his departure will be keenly felt by many members who followed him at our outings. Mr. Eifrig left Ottawa on September 27th to take up his new work at the College of the Lutheran Church at Addison, Ill. As Professor of Ecclesiastical and Secular History, his best thoughts will be directed along lines of favourite studies. It is also probable that he will teach Natural History. The Addison College is the principal one of its kind of the Lutheran Church in the United States. We extend to Mr. Eifrig our congratulations on this further recognition of his ability, and at the same time wish him continued success and happiness in his new field of labor. We hope to publish in our pages many more of his interesting papers.

BOOK REVIEW.

HYGIENE FOR YOUNG PEOPLE.—A Reader for Pupils in Form III of the Public Schools. By Professor A. P. Knight, M.A., M.D., Queen's University, Kingston. 8vo., pp. 211. Toronto: The Copp-Clark Co.

It was a happy suggestion which prompted the gifted Professor of Physiology in Queen's University, Kingston, Dr. A. P. Knight, to prepare the handsome elementary guide to health, "Hygiene for Young People," just issued in Toronto, under the recommendation of the Ontario Minister of Education. It is published as a reader for Public School use and for School Libraries, and no book could be more admirably adapted for both purposes. As a Birthday or Christmas Gift-book it would be valued by any thoughtful boy or girl. A more attractive and fascinating little work could not be imagined, and it is

popular, wonderfully clear, and thoroughly scientific, in its treatment of matters of daily life, regarding which far too much ignorance prevails. A life-like portrait of the immortal Apostle of Health, Louis Pasteur, forms the frontispiece, while the text is illustrated by sixty-six original drawings and half-tones. The pleasing cover, the paper, the clear large type, and the whole get-up of the book reflect the greatest credit on the author and publisher.

The author's former "Introductory Physiology and Hygiene" has proved its usefulness as a teacher's manual, and the present work was written at the suggestion of a former active member of the Ottawa Field-Naturalist's Club, Inspector R. H. Cowley, and of Inspector W. I. Chisholm. Professor Knight has long been recognized as a leading educationist and few of our Canadian scientific men have had his lengthy and rare experience in the work of instruction. Hygiene, like Political Economy, is too often regarded as a dismal science, a science of "Don'ts," as testified by health notices in every street and tram-car. To make the subject attractive to young people is a difficult task, but Professor Knight has achieved it with marked success. More readable pages could not be written than those on Sunlight, Bathing, the Eyes, Digestion, Exercise, Disease, and Clothing. Any boy or girl will be the better for reading this bright little manual. Much of the sickness, which afflicts our children, is due to ignorance, not only on the part of the sufferers but on the part of parents. Yet, even the most devoted parents cannot watch their offspring all the time. How valuable then to interest the young in the subject of health, treated so ably in this book! The lessons here taught will become second-nature in the child who will avoid dangers to health as naturally as he will avoid a deep hole in the side-walk. Tennyson's sad lines:—

"How dwarf'd a growth of cold and night,
How blanch'd with darkness must I grow."

find effective antidote in Professor Knight's chapter II where the pale face, the stunted growth and the weak frame, characteristic of unnatural conditions, especially city overcrowding, are described, and the causes and the remedies clearly enunciated.

Fresh air, cleanliness, tobacco, alcohol, are all amply treated by the author, with convincing reasonableness. The important chapters, XIII and XIV, treat of the blood and circulation. It is curious that more than a quarter of the blood in the human body is contained in the liver, while through the brain and muscles there circulate five or six parts, by weight, of the total amount, the bones receiving only $2\frac{1}{2}$ per cent. and the skin barely 1 per cent. To the blood is due, as Professor Knight points out, the "pinkish or reddish colour of the skin," and the fine ruddy cheeks of Canadian girls, as compared with their pale cousins in New York or Boston, are partly to be explained

by our colder air. Red corpuscles are more numerous in the blood in a colder environment, and people who live in the country have more red corpuscles than those living in towns. The number of these minute red particles in our blood is surprising. There are between three and a half to five millions of them in a man 20 or 30 years of age. Fishes, such as trout and cod, have not half that number, and the "cold-blooded" sharks are said to have not more than 140,000 to 230,000 in their vascular system. In these days of "suffragette" assertions and claims, man can boast, on scientific grounds, the superior richness of his blood! Man's blood has 12 to 20 per cent. more solid matter than woman's; but woman's blood is always found to be brighter in colour, hence the more attractive complexion when unimproved by alleged artificial aids! Of course the white corpuscles of the blood cannot be ignored, though they are not one-seventh in number, there being 2,284 white to 11,306 red corpuscles in human blood. But Professor Knight has no space for curious details such as these; his object is more direct and practical, and his wise words on "How to breathe," on foul air in the house (p. 44), care of the hands (p. 60), care of the teeth (p. 76), ears and earache (p. 84), eyesight (p. 92), round shoulders (p. 100), and clothing (p. 105) are perfectly admirable. Food and milk form a special chapter, XVI, but one cannot look at a single page of this bright readable work without having the attention at once enchained. Exercise, clothing, and sleeping ("sleep on the right side," says the author), and other vitally interesting and valuable matters are explained in the clearest, simplest and most accurate language. Nothing could be more instructive than the strange experiment by Dr. Hodge of Clark University, U.S.A., with four puppies, and Bum's conversion from habits of intoxication, and Nig's devotion to the whiskey flask, are interesting and pathetic in the extreme. Consumption is amply dealt with in chapter XXV, and indeed all phases of a healthy life and avoidance of common ills are clearly and concisely treated in this splendid little work, in which we have not found a single misprint or typographical error. The only suggestion which a critic might make would be the addition of an explanation that whereas arteries carry arterial blood and veins carry venous blood, as stated on page 97, the reverse is the case in the lungs, in which the pulmonary arteries carry venous blood and the veins carry from the lungs bright, arterial blood.

Thirty years ago a clever English lady, Mrs. Catherine M. Buckton, the first lady ever elected to a School Board, wrote a small handbook entitled "Health in the House," and it was such a success that edition after edition was exhausted in a few years. May Professor Knight's valuable book as rapidly secure a wide circulation and successive new editions be called for by the Canadian public!

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