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LIST OF COLEOPTERA COLLECTED AT MASSETT, QUEEN CHARLOTTE ISLANDS, B. C.

BY REV. J. H. KEEN.

The beetles enumerated below were all taken within a circle of five miles' radius from Massett, on the Northern Shore of Graham Island—the most northerly of the Queen Charlotte group. This area, though small, is considerably diversified, and favourable to coleopterous life. The island here is flat, and covered with a forest of spruce and hemlock, with a sprinkling of alder. The soil is sandy, and for the most part dry. The coastline includes a stretch of level sand reached only by the highest tides, and strewn with driftwood; a protected pebbly beach and a tract of rough stones, also covered by the high tides. The sandy beach I find most productive, many even inland insects appearing to fall on the loose sand, and, being unable to rise, crawl for shelter under the driftwood. Hills and fresh-water streams (of any size) are absent, and I quite expect these situations, which occur in other parts of the island, to yield, when examined, several additional species.

These islands enjoy a temperate, though extremely humid, climate. Sunshine is rare, rain of almost daily occurrence. Snow seldom falls in any quantity, and usually disappears quickly. Once in six or eight years the thermometer falls to zero; usually, however, a few degrees of frost mark the extreme of cold. No regular meteorological record is, I regret to say, kept here.

As intimated above, this list does not pretend to exhaust the Coleoptera of the locality; indeed, fresh species are still constantly occurring. It has been thought well, however, to print the list as it at present stands, and to supplement it with another at a later date.

I should like to express here my great indebtedness to my friend, Mr. James Fletcher, of Ottawa, as well as to the learned specialists whose aid he has enlisted in the preparation of this list. Mine has been simply the easy and pleasant work of collecting the specimens; their's, the diffi-

cult and complicated task of determining and collating them. Bearing this in mind, the reader will find no difficulty in rightly apportioning whatever commendation he may have to bestow.

[The extremely interesting collection of Coleoptera, of which the following list gives the names of those species up to the present identified with certainty, has been made by the Rev. J. H. Keen during the past three years. It was hoped to have published with each species extensive notes and figures of several new to science which Mr. Keen has discovered; but this proves to be impossible just now. As so little is known of the fauna of the Queen Charlotte Islands, every care has been taken to ensure the correct identification of the species. Thanks are particularly due to the following specialists who have given much time to examining and naming the different species and comparing them with Eastern forms:—Dr. J. Hamilton, Dr. C. V. Riley, Mr. L. O. Howard, Dr. Geo. H. Horn, Capt. T. L. Casey, Mr. H. F. Wickham, and Mons. A. Fauvel, of Caen, France. Figures (now in course of preparation) and descriptions of new species, together with fuller notes of the rarer species, will appear later. The numbers given are those of Henshaw's list.—J. FLETCHER.]

96. *Cychnus marginatus*, Fish.—Not uncommon.

96. *Cychnus marginatus*, Fish., var. *Fulleri*, Horn.—Common under logs in woods from May onwards. Several times taken in act of feeding on snails.

106. *Cychnus tuberculatus*, Har.—Frequent under logs from April onwards.

169. *Loricera 10-punctata*, Esch.—Rare. In moss near lake in February.

176. *Notiophilus sylvaticus*, Esch.—Occasionally under logs in warm, dry places.

180. *Leistus ferruginosus*, Mann.—Occasionally under rotten bark of prostrate logs.

184. *Nebria diversa*, Lec.—Numerous in spring with *N. Sahlbergi* under driftwood on beach.

195. *Nebria Sahlbergi*, Fish.—Frequent under logs on beach from May onwards.

221. *Dyschirius 3-dentatus*, Lec.—Numerous on gravelly beach at high-water mark in June.

315. *Bembidium erasum*, Lec.—Not common. Ground, July 22, 1891.

375. *Bembidium indistinctum*, Dej.—Numerous on sandy banks of salt inlet.

- 425 *Bembidium spectabile*, Mann.—One specimen.
426. *Bembidium oblongulum*, Mann.—Scarce. Under logs at edge of ponds.
484. *Trechus ovipennis*, Mots.—Not common. Under logs on beach
500. *Pterostichus crenicollis*, Lec.—Common from April onwards.
503. *Pterostichus validus*, Dej.—Not rare.
508. *Pterostichus amethystinus*, Dej.—Common. Seen *in cop.* February 26th.
509. *Pterostichus castaneus*, Dej.—Rare. Under bark.
583. *Pterostichus Luczotii*, Dej.—Common all summer on grassy beach.
653. *Amara scitula*, Zimm.—One only in June.
657. *Amara impuncticollis*, Say.—Abundant.
670. *Amara interstitialis*, Dej.—Rare.
1164. *Tachycellus nigrinus*, Dej.
1168. *Tachycellus badiipennis*, Hald.—Not rare; in grass tufts.
1275. *Bidessus affinis*, Say.—Very common.
1349. *Hydroporus tartaricus*, Lec.—Occurs sparingly.
1352. *Hydroporus tristis*, Payk.—Abundant throughout year. Seen *in cop.* on March 25th.
1379. *Ilybius subæneus*, Er.—Common.
1422. *Agabus æuginosus*, Aubé.—Common.
1459. *Rhantus binotatus*, Harr.—Common.
1474. *Colymbetes exaratus*, Lec.—Occasional.
1492. *Acilius semisulcatus*, Aubé.—Occasional.
1529. *Gyrinus picipes*, Aubé.—Numerous in ponds from May onwards.
1551. *Helophorus inquinatus*, Mann.—Under driftwood in sandy beach, 23rd May, 1893.
1646. *Hydrobius scabrosus*, Horn.—Not rare; on submerged logs in running streams.
1653. *Hydrobius fuscipes*, L.—Very rare. May. Shallow ponds.
1665. *Cercyon fimbriatus*, Mann.—Abundant in rotten sea-weed, June—August.
1676. *Cercyon adumbratus*, Mann.
Cercyon humeralis.—Common in decaying grass. On wing during March and April.
1670. *Cercyon fulvipennis*, Mann.
1680. *Cercyon analis*, Payk.—Frequent under excrement in summer.
Cercyon lateralis, Marsh.—Common.

1692. *Leptinus testaceus*, Müll.—From a living shrew, September 9, 1892.
- 1701a. *Necrophorus Melsheimeri*, Kirby.—Abundant from May onwards.
1702. *Necrophorus vespilloides*, Hbst.—Occasional.
1706. *Silpha lapponica*, Hbst.
1715. *Necrophilus hydrophiloides*, Mann.—Abundant, especially during winter. Active under carrion even during snow.
1716. *Pelates latus*, Mann.—Abundant under logs and loose bark. Seen *in cop.* February 16th.
1719. *Agyrtes longulus*, Lec.—January 3. In flood refuse. Several taken.
1720. *Sphaerites glabratus*, Fab.—Common during summer, under carrion.
1722. *Pinodytes cryptophagoides*, Mann. From June to September, under logs.
1724. *Catoptrichus Frankenhauseri*, Mann.—Somewhat rare. Under carrion in autumn.
1725. *Choleva egena*, Horn.—Two skimmed from surface of flood refuse in meadow, 14th Oct., 1893.
1726. *Choleva luridipennis*, Mann. (also one specimen of a black variety). Abundant during autumn, under carrion.
1741. *Ptomaphagus pusio*, Lec.—Rare in hen's nest, 6th November, '91. *Hydnobius*, probably n. sp.—In rotten grass, 17th June, 1892.
1769. *Anisotoma humeralis*, Horn.—January 3. In flood refuse. A few taken.
1803. *Agathidium concinnum*, Mann.—Under bark in December. Not common.
1804. *Agathidium rotundulum*, Mann.—Rare. Under carrion. January 3. In flood refuse. Abundant.
1807. *Agathidium pulchrum*, Lec.—Rare. Taken from mud gallery made by ants on trunk of dead alder.
1847. *Scydmaenus biformis*, Makl.—Not common. In moss at tree roots in February.
1899. *Batrissus frontalis*, Horn.—Not common. In ants' nests.
1911. *Bryaxis albionica*, Mots.—Occasionally in winter, in moss at tree roots.
1955. *Faronus parviceps*, Makl. — One specimen taken on wing in September.
2025. *Homalota granularis*, Mann.—Common in sea-weed.

2026. *Homalota maritima*, Mann.—Common. Frequent stones near low-water mark on beach.
2027. *Homalota picipennis*, Mann.—Numerous in June, under excrement.
2033. *Homalota geniculata* Makl.—Common on beach in loose dry sand near high-water mark. Under driftwood. Shaken from rotten sea-weed, June 3. Emerged and took flight on sand being pressed, April and May.
2036. *Homalota comparabilis*, Makl.—One taken in April, under driftwood on sandy beach.
2039. *Homalota fucicola*, Makl.—June 3; in rotten sea-weed.
- 2040½. *Homalota atricornis*, Fol.—Not common. Under excrement in August.
- Homalota fungi*, Grav.—Common under excrement during summer; rotten grass in June; occasionally in turf in winter.
- Homalota ingrata*, Fvl.—Numerous under carrion in May. Jet black. Legs dusky yellow.
- Aleochara californica*, Fvl.
2056. *Aleochara castaneipennis*, Mann., var. with rufous elytra.—Common under carrion, all summer.
2057. *Aleochara sulcicollis*, Mann.—Numerous under rotten sea-weed.
2058. *Aleochara cognata*, Makl.
- Aleochara littoralis*, Makl.—Under driftwood on beach.
- 2064½. *Oxypoda crassicornis*, Fvl.—January 4. Common in flood refuse.
9292. *Autalia elegans*, Casey.—Numerous in August.
- Bryobiotus Keeni*, Fvl., n. sp.—Occasional in June, under stones on sandy beach, between tide marks. Larvæ in same place.
- Phytosus Fletcheri*, Fvl.—Rare; taken in May under driftwood.
2071. *Bolitochara notata*, Makl.—(= *Californica*, Casey).—Occasional; under bark. One in June, 1893, in rotten grass. Three on carrion in March.
2075. *Leptusa*.—Occasionally under bark. March to October.
- Heterothops asperatus*, Fvl., n. sp.—Several taken in April, under driftwood on sandy beach.
9479. *Quedius erythrogaster*, Mann.—Rare; in manure heaps in May and June.
2101. *Quedius sublimbatus*, Makl.—Occasional; in moss in winter.
- Quedius marginalis*, Makl.—Occurs occasionally in summer in rotten grass.

2103. *Quedius capucinus*, Grav.—Common during summer.
2105. *Quedius lævigatus*, Gyll.
2119. *Creophilus villosus*, Grav.—Common.
2120. *Hadrotus crassus*, Mann.—Abundant in rotten sea weed.
2149. *Philonthus æneus*, Rossi.—Common under carrion in summer.
2150. " *fervus*, Nord.
2214. " *Siegwaldi*, Mann.
2221. " *nigritulus*, Grav.
2221. " *picipennis*, Makl.
2258. *Cafius canescens*, Mann.—Common under rotten sea-weed ; under log on sandy beach, April 28.
2259. *Cafius seminitens*, Horn.—Common.
2261. *Cafius lutipennis*, Horn.—Not uncommon during spring, under logs on sandy beach.
2264. *Cafius femoralis*, Makl.—Frequent in April, under driftwood or sandy beach.
2298. *Baptolinus macrocephalus*, Nord.—Common, under bark.
2311. *Stenus Juno*, Fab.—Under log, in March and June ; not numerous.
2354. *Stenus brevipennis*, Makl.—Dec. 10 ; in moss, in March.
2427. *Stenus adsector*, Makl.—Abundant in turf at all times.
- Actocharis*.—? March 3 ; under log on beach.
- Haida Keeni*, Fvl.—Not common. Found in moss at roots of trees, in December.
2565. *Liparocephalus brevipennis*, Makl.—In autumn, swarming under stones on the Massett beach.
2566. *Liparocephalus cordicollis*, Lec.
- Diалota insolita*, Casey.—Common in August, on barnacle-covered stones on beach.
2606. *Tachinus maculicollis*, Makl.—In fungi, in August.
2607. *Tachinus semirufus*, Horn.—Occasionally under rotten fruit, in July.
2627. *Tachinus Crotchii*, Horn.—Numerous in summer, in rotten grass.
2659. *Boletobius cingulatus*, Mann.
2664. *Boletobius 3-notatus*, Er.—On fungi, in August ; occasional.
- Mycetoporus seriaticollis*, Fvl, n. sp.—Rare. Moss. A few taken in flood refuse, in December.
2746. *Bledius albonotatus*, Makl.—Numerous in May ; burrowing in sand between tide marks,

2753. *Oxytelus fuscipennis*, Mann.—Common throughout summer, under excrement.
2763. *Haploderus linearis*, Lec.—Very numerous on under side of planks on ground, in March; occasional in rotten grass, in October.
2785. *Ancyrophorus biimpressus*, Makl.—Common among rotten leaves in woods, in winter.
Thinobius pygmæus, Casey.—Numerous on pebbles between tide marks, in June.
2812. *Amphichroum testaceum*, Mann.—Numerous in May, on skunk cabbage.
2817. *Amphichroum maculatum*, Lec.—Beaten from spruce trees, in April and May.
2820. *Tanyrhinus singularis*, Mann.—March 18, on under side of log near small stream. Three only, though carefully sought for.
2821. *Trigonodemus striatus*, Lec. var. or nov. sp.—In flood refuse, 13th October, 1893.
2823. *Lathrimæum subcostatum*, Makl.—Often beaten from spruce, from May onwards; also under carrion.
2824. *Lathrimæum fimetarium*, Makl.—Abundant under carrion during spring and autumn.
Lathrimæum Keeni, Fvl., n. sp.—Several in rotten sea-weed, in June.
2835. *Acrulia tumidula*, Makl.—Common throughout year, under bark; occasionally under carrion, in November.
2838. *Homalium strigipenne*, Makl.
2841. *Homalium pusillum*, Grav.—Under chips in woods, May 30. Common. Seen *in cop.* in June. Whole body reddish, blotched with black.
Homalium arpedinum, Fvl., n. sp.—Common in April and May, under loose bark of felled spruce.
2843. *Homalium foraminosum*, Makl.
2847. " *humile*, Makl.
Homalium irregulare, Fvl.—Abundant during May, in crab and other blossoms.
9354. *Homalium algarum*, Casey.—Under logs and driftwood on sandy beach, May, November.
Homalium concinnum, Marsh.—Common under manure. One in wasp's nest, August 24, 1894.

- Homalium striatum*, Grav., var.—One or two under carrion, in December.
- Homalium florale*, Payk, var.—One under carrion, in March.
2863. *Anthobium pothos*, Mann.
2871. *Orobanus simulator*, Lec.—In moss on submerged log in running stream, April 7. Two only taken.
2878. *Protinus limbatus*, Makl.—Occasional, in rotten fungi, in September.
- 2878a. " *Maklini*, Fvl.—One taken on wing, March 23.
- " *brachypterus*, Fab.
- Protinus basalis*, Makl.—Abundant during spring and autumn, under carrion. Seen *in cop.* November 13.
2882. *Megarthus pictus*, Mots.—Occurs sparingly, from April onwards. In rotten grass, in September.
2886. *Megarthus atratus*, Makl.—Not common. Under excrement, in July.
- Triogonurus nebrionides*, Fvl.—Rare, under loose chips lying on dry spruce log, in August.
2906. *Micropeplus laticollis*, Makl.—Rare. Found in April, under chips.
2907. *Micropeplus punctatus*, Lec.—Several taken in June on bank of small stream. They emerged on water being thrown on the bank.
2912. *Micropeplus brunneus*, Makl.—Frequent during June and July, on newly cut spruce logs, under half-detached chips. Seen *in cop.* in June.

(TO BE CONTINUED)

ENTOMOLOGICAL NOTES.

FROM J. ALSTON MOFFAT, LONDON, ONT.

Mr. C. G. Anderson, of this city, has a friend who is an electric-light trimmer, and began last summer taking the insects that he could conveniently secure whilst on his rounds of duty. When looking over this material recently, Mr. Anderson observed a sphinx moth that seemed strange to him; so he brought it to me to determine, when it proved to be *Dilophonota ello*, Linn., which is the first reported appearance of this Southern moth that I have heard of, since the autumn of 1886, when a number of specimens of it were taken by various persons in different parts of the country.

Whilst "sugaring" on the 24th of April, Mr. Anderson found on the side of a tree a *Catogenus rufus*, Fab., as a male, paired with a *Cucujus clavipes*, Fab., as the female.

THE INSECT FAUNA OF THE SUDBURY DISTRICT, ONTARIO.

BY JOHN D. EVANS, TRENTON.

(Continued from page 146.)

	LUCANIDÆ.	<i>Pachyta monticola</i> , Rand. . . .	1
	<i>Platycerus depressus</i> , Lec. . . .	" <i>liturata</i> , Kirby. . . .	1
	SCARABÆIDÆ.	" <i>rugipennis</i> , Newm. . .	1
	<i>Aphodius fossor</i> , Linn. . . .	<i>Acmaeops proteus</i> , Kirby. . . .	83
	" <i>hamatus</i> , Say. . . .	" <i>pratensis</i> , Laich. . .	54
	" <i>fimetarius</i> , Linn. . . .	<i>Gaurotes cyanipennis</i> , Say. . . .	16
*	" <i>crassulus</i> , Horn. . . .	<i>Bellamira scalaris</i> , Say.	5
	" <i>granarius</i> , Linn. . . .	<i>Typocerus velutinus</i> , Oliv. . . .	2
	" <i>vittatus</i> , Say.	<i>Leptura subhamata</i> , Rand. . . .	5
	" <i>inquinatus</i> , Hbst. . .	" <i>sexmaculata</i> , Linn. . . .	22
	" <i>leopardus</i> , Horn. . . .	" <i>nigrella</i> , Say.	16
	<i>Dichelonycha elongata</i> , Fab. . .	" <i>canadensis</i> , Fab.	41
	" <i>subvittata</i> , Lec. . . .	" <i>erythroptera</i> , Kirby. . .	14
	<i>Serica vespertina</i> , Gyll.	" <i>sanguinea</i> , Lec.	5
	<i>Diplotaxis tristis</i> , Kirby. . . .	" <i>chrysocoma</i> , Kirby. . . .	256
	<i>Lachnosterna fusca</i> , Fröh. . . .	" <i>proxima</i> , Say.	14
*	" <i>insperata</i> , Smith	" <i>biforis</i> , Newm.	3
	<i>Euphoria fulgida</i> , Fab.	* " <i>pedalis</i> , Lec.	1
	<i>Osmoderma scabra</i> , Beauv. . . .	" <i>vittata</i> , Germ.	1
	<i>Trichius affinis</i> , Gory.	" <i>sphaericollis</i> , Say.	3
	CERAMBYCIDÆ.	" <i>mutabilis</i> , Newm. . . .	16
	<i>Asemum mœstum</i> , Hald.	* " <i>viridipennis</i> , Hald. . . .	3
	<i>Criocephalus agrestis</i> , Kirby. .	<i>Monohammus scutellatus</i> , Say. .	77
	<i>Tetropium cinnamopterum</i> ,	" <i>confusor</i> , Kirby	47
	Kirby.	<i>Hyperplatys maculatus</i> , Hald. .	1
	<i>Phymatodes dimidiatus</i> , Kirby. .	<i>Acanthocinus obsoletus</i> , Oliv. .	2
	<i>Merium proteus</i> , Kirby.	<i>Pogonocherus penicellatus</i> ,	
	<i>Calloides nobilis</i> , Say.	Lec.	3
	<i>Xylotrechus sagittatus</i> , Germ. .	<i>Saperda mœsta</i> , Lec.	1
	" <i>colonus</i> , Fab.	<i>Oberea ruficollis</i> , Fab.	1
	" <i>undulatus</i> , Say.	CHRYSOMELIDÆ.	
	" <i>lunulatus</i> , Kirby.	<i>Donacia palmata</i> , Oliv.	10
*	" <i>interruptus</i> , Lap.	" <i>piscatrix</i> , Lac.	1
	<i>Clytanthus ruricola</i> , Oliv.	" <i>proxima</i> , Kirby.	10
	<i>Rhagium lineatum</i> , Oliv.	" <i>subtilis</i> , Kunze.	1

Donacia æqualis, Say.....	8	Crepidodera Helxines, Linn	56
* " confusa, Lec.....	3	Systema hudsonias, Först.....	19
Orsodachna atra, Ahr.....	54	Phyllotreta vittata, Fab.....	8
Syneta ferruginea, Germ.....	15	Psylliodes punctulata, Melsh..	4
Cryptocephalus 4-maculatus, Say.....	16	Odontota nervosa, Panz.....	2
*Cryptocephalus venustus, Fab.	5	TENEBRIONIDÆ.	
Pachybrachys femoratus, Oliv.	2	Phellopsis obcordata, Kirby..	5
" infaustus, Hald.	2	Iphthimus opacus, Lec... ..	9
Diachus auratus, Fab... ..	4	Upis ceramboides, Linn.....	83
* " pallidicornis, Suffr... ..	7	Hapladrus concolor, Lec. . .	25
Xanthonia 10-notata, Say... ..	4	Tenebrio tenebrioides, Beauv..	5
Adoxus vitis, Linn.....	34	Blapstinus interruptus, Say... ..	1
Chrysochus auratus, Fab....	2	Tribolium madens, Charp. . .	1
Paria canella, Fab.....	3	Platydemia americanum, Lap.	41
" 4-notata, Say.....	4	Hypophlæus parallelus, Melsh.	59
Prasocuris obliquata, Lec....	1	Boletophagus corticola, Say... ..	1
Doryphora 10-lineata, Say... ..	5	CISTELIDÆ.	
Chrysomela elegans, Oliv....	5	Hymenorus niger, Melsh. . . .	2
" Philadelphica, Linn	11	* " communis, Lec. . . .	1
" spirææ, Say.....	3	Isomira quadristriata, Coup..	14
" Bigsbyana, Kirby.	14	LAGRIIDÆ.	
Gastroidea polygona, Linn....	21	Arthromacra ænea, Say.....	126
Lina lapponica, Linn.....	121	MELANDRYIDÆ.	
* " scripta, Fab.	2	Penthe obliquata, Fab.....	1
Gonioctena pallida, Linn....	22	Melandrya striata, Say.....	
Phylloocta vulgatissima, Linn.	1	Emmesa connectens, Newm..	1
Phyllobrotica discoidea, Fab..	16	Phryganophilus collaris, Lec..	12
Diabrotica 12-punctata, Oliv..	1	Xylita lævigata, Hellw.....	28
Adimonia rufo-sanguinea, Say.	1	Scotochroa atra, Lec.....	4
Galeruca sagittaria, Gyll.....	3	Serropalpus barbatus, Schall..	3
" decora, Say.....	118	Eustrophus confinis, Lec.....	1
(Edionychis quercata, Fab....	2	* " repandus, Horn..	1
Disonycha alternata, Ill.....	5	Stenotrachelus arctatus, Say.	2
Haltica bimarginata, Say....	127	PYTHIDÆ.	
" chalybea, Ill.....	1	Crymodes discicollis, Lec....	167
" carinata, Germ.....	6	Boros unicolor, Say..	21
" inarata, Lec.....	1	Pytho americanus, Kirby.....	73
		Priognathus monilicornis, Rand.....	10

OEDEMERIDÆ.		Hyllobius confusus, Kirby.	104
Calopus angustus, Lec.	4	Hypomolyx pineti, Fab.	2
Ditylus cæruleus, Rand.	5	Dorytomus mucidus, Say.	23
MORDELLIDÆ.		" brevicollis, Lec.	2
Anaspis nigra, Hald.	5	" longulus, Lec.	3
" flavipennis, Hald.	7	Procas Lecontei, Bedel	1
Mordella borealis, Lec.	1	Lissorhoptrus simplex, Say.	17
" melæna, Germ.	1	*Magdalis hispidoides, Lec.	1
" scutellaris, Fab.	6	Anthonomus scutellatus, Gyll.	1
" marginata, Melsh.	1	" signatus, Say.	13
Mordellistena scapularis, Say.	1	" helvolus, Boh.	4
ANTHICIDÆ.		* " rufipennis, Lec.	7
Nematoplus collaris, Lec.	1	" corvulus, Lec.	3
Anthicus formicarius, Laf.	3	* " cratægi, Walsh.	
PYROCHROIDÆ.		Orchestes niger, Horn.	15
Dendroides concolor, Newm.	4	Elleschus bipunctatus, Linn.	47
MELOIDÆ.		" ephippiatus, Say.	8
*Meloe impressus, Kirby.	2	Cryptorhynchus bisignatus,	
" americanus, Leach.	3	Say	1
Macrobasis unicolor, Kirby.	51	Ceutorhynchus decipiens, Lec.	1
*Pomphopcea Sayi, Lec.	4	SCOLYTIDÆ.	
RHINOMACERIDÆ.		Pityophthorus materiarius,	
Rhinomacer pilosus, Lec.	3	Fitch	8
RHYNCHITIDÆ.		Pityophthorus puberulus, Lec.	1
Rhynchites cyanellus, Lec.	5	Xyloterus bivittatus, Kirby.	21
ATELAEIDÆ.		Xyleborus cælatus, Eich.	11
Attelabus bipustulatus, Fab.	1	Dryocætes autographus, Ratz.	8
" rheis, Boh.	4	Tomicus calligraphus, Germ.	21
OTIORHYNCHIDÆ.		" cacographus, Lec.	26
Otiorhynchus ovatus, Linn.	1	" pini, Say.	2
CURCULIONIDÆ.		Hylesinus opaculus, Lec.	1
Sitones flavescens, Marsh.	2	Dendroctonus terebrans, Oliv.	199
Trichalophus alternatus, Say.	1	" simplex, Lec.	14
Lepyrus colon, Linn.	7	Hylurgops glabratus, Zett.	24
" geminatus, Say.	8	ANTHRIBIDÆ.	
Pissodes strobi, Peck.	4	Eurymycter fasciatus, Oliv.	1
" affinis, Rand.	56	Cratoparis lunatus, Fab.	2
" dubius, Rand.	1		

SPRING COLLECTING IN ALBERTA.

BY F. H. WOLLEY DOD, CALGARY.

Perhaps the following short account of a few days' spring collecting here may be of interest to readers of the CANADIAN ENTOMOLOGIST.

The locality I have worked from during the two years that I have been in the country, is close to the mouth of Fish Creek, about twelve miles south of Calgary, and a mile from the right bank (south) of Bow River. I have a fellow worker about nine miles further west, near the head of Pine Creek, by name Mr. Arthur Hudson, a keen observer, and, I believe, the only entomologist besides myself who has ever collected here for a whole season, and between us we are at present almost daily increasing the list of macro-lepidoptera found around Calgary. We have already over fifty species of butterflies on the list, with three or four more doubtful species, and are confident that we shall be able to make several additions during the coming season. Of the moths, more particularly the Noctuidæ (and their name here is certainly Legion!), new comers never cease, as I think Prof. Smith can testify. When Mr. Elwes paid me a visit in July, 1893, he asked: "Treacle is not much used here, is it?" I replied that I had only been "at it" for a month, and was fairly well pleased with the result, though of course my take might have been exceptional. Were I asked the same question now, I should, without hesitation, reply: "Well, just *isn't* it, that's all, and from June to October, too!" During last July I not unfrequently counted from sixty to eighty moths on a treacle patch about eighteen inches long and three or four wide, comprising about fifteen or sixteen species. A sight such as that, however, certainly *is* exceptional. However, I have other modes of collecting to speak of now, as at this early date treacle is scarcely worth working.

The season commenced this year on March 29th, on which date Mr. Hudson netted at dusk a species of *Litholomia napæa* (hibernated). I saw *Vanessa miiberti* on the following day. On 31st a few species of *Calocampa cineritia* showed up at treacle. Sallows were in flower in sheltered spots on April 22nd, and, it being a fairly warm night, I ventured forth, with the shattered remains of an old parasol into which to shake the moths. I felt fairly confident of some success, as I thought to myself that sallows in flower mean that spring moths have hatched; such at least has been my experience in the Old Country. At the first shake, down come several *Calocampa cineritia* and *Litholomia napæa*, both hibernated, I suppose, but some of them looking none the worse. I shake the next

tree, and down again come the same two species in crowds, especially *cineritia*, one of which comes down my neck, with a fat noctuid larva to keep it company. Such are the evils of shaking willows, though when the trees are from eight to twelve feet high, reaching the blossoms is out of the question. And, after all, I believe shaking pays best, except for geometræ, which take wing in preference to dropping. The few next trees yield the same species, one specimen of *Twniocampa pacifica*, and one of another form, which Prof. Smith says is also *pacifica*, but my observation of the two forms this spring has led me to believe that he is mistaken. Forcing my way through a thicket of willow bushes does not agree with the poor old parasol; it caught me many moths last spring, and I am loth to part with it, but the cover has now more holes than silk, and the framework is broken beyond repair, so it is left to be ignominiously chewed by cows. I have now to shake my moths on to mother earth, or, better still, in some instances, into water. A bath seldom seems to injure them, and when lying on the surface of water they are easily seen, and if out of reach of the hand can be fished out with a long stick. *Calocampa cineritia* appears rather to appreciate a dip, at least I should judge so from the fact that I frequently leave them lying inert on the water, after I have picked out all the more desirable "fry." *T. pacifica*, on the other hand, seldom lies still on the water, and from the way it skims along the surface until it finds some twig or terra firma, might almost be called a good swimmer. A few more trees are tried and two specimens of *T. pacifica* appear on the water. Ah! There is a fine form, just out of reach; I look around for a stick to fish him out, but before I can find one, away he skims across the pool as though he had suddenly recollected a pressing engagement on the opposite bank. He has not gone far before there comes a splash, and the rings on the water diverging from the spot where I last saw my fine form of *pacifica* tell me that he has gone to assist the internal economy of a young jack. About an hour's work sees me "through" for the night, and after 10 p.m. I have never found a second visit to willows pay. The catch consists, besides the above-mentioned species, of one *Ufeus satyricus* and one *Scopelosoma devia*, both, I suppose, hibernated, though both are fine specimens, particularly *devia*. The following night a visit to the same willows results in the same species, and in addition, two specimens of an undescribed Mamestra, *Xylina Georgii* (1) and *Tachnobia salicarum* (1). *T. pacifica* is decidedly on the increase, and what a variable species it is, too! To-night *Litholomia napwa* is

less common. April 27th sees me "at it again." The temperature is 44' and the air is still. To-night there is a decided falling off in the numbers of *C. cineritia* and *L. napæa*, and an increase in *T. pacifica*. I take also *Calocampa nupera* (1), *Mamestra* (undescribed) (1), and one each of two species entirely new to me; one of them apparently a *Tæniocampa*,—can it be an extreme form of *pacifica*?—and the other I should say allied to *Xylina*; but, alas! my conjectures as to the generic position of species often prove to be very wild indeed, so little have I studied classification. On the 28th I pay a visit to Mr. Hudson. He searches his blossoms, and nets moths flying around them, and his take has been even better than mine. In addition to most of the species I have mentioned, he has come across a species of *Cucullia* new to me, taken with the net only, and at least one fresh *Tæniocampa*. Some of my species, too, have been more common with him, such as *Scopelosoma devia* (in splendid condition), *Tachnobia salicarum*, and the supposed *Xylina*; also *Scopelosoma tristigmata* (2). However, he has not come across the above-mentioned *Mamestra*, n. sp., nor one or two of the others which fell to my lot. On 27th he took *Plusia californica* and *Erebia discoidalis*, perhaps a record date for the latter species, and a week earlier than I observed it last year. On April 30th I saw *E. discoidalis* (1) and *Argynnis freya* (1), and a species of *Pieris*, near the forks of Fish Creek, about twenty miles west of here. I have certainly a record for *Chionobas alberta*, Elwes., which I saw this year on May 3rd. Work at sallows this week is not very prolific, and in fact *T. pacifica* is nearly over. Treacle on May 3rd produced *C. cineritia* (common), and *Mamestra*, n. sp. (5), nothing more. On the 5th I again visit Mr. Hudson. A cold breeze is blowing from north-west, but on my way I find *Chionobas alberta* fairly common on a hillside. This species, a full description of the life-history of which will probably appear in No. XVI. of Mr. Edwards's "Butterflies of North America," appears to have a marked preference for dry, stony hillsides, where the grass is stunted in growth; just such localities, in fact, where abounds that large anemone so common in this district. But this morning the wind, and a large, slow-travelling cloud, which presently obscures the sun, prevent my taking more than a dozen specimens. In the afternoon Mr. Hudson and myself have fair sport amongst *Argynnis freya* in a deep coolie, sheltered from the wind. Here we find a sprinkling of *E. discoidalis*, but only one *C. alberta*, which prefers, despite the wind, to keep on higher ground. One specimen of a species of *Eupithæcia*, several of a small yellow "Carpet," and one of a probable species of *Boarmia*, complete the list up to date.

A NEW AEGIALE (MEGATHYMUS).

BY DR. HENRY SKINNER, PHILADELPHIA, PENNA.

Aegiale Streckeri, n. sp., ♂.—Expands from $2\frac{1}{4}$ inches to 3 inches.

Upper side.—Superiors rich brown, but not as bright, nor has the brown as much red in it, as in *yucca*. There are three sub-apical costal white spots; a lemon-yellow spot at end of cell; there is a row of five yellow spots running across the wing, parallel with the exterior margin; the upper two are small and square in shape; the lower three are small and triangular, and there is one in each of the three median interspaces. The inferiors have a yellow marginal border about $\frac{1}{8}$ inch in width, the wing being otherwise immaculate, and is clothed with long, silky brown hair.

Under side.—Superiors have the spots repeated. Inferiors are gray, with a varying number of small white spots—one specimen having two and the other five. The female is larger and has the same number of spots as the male; the three sub-apical spots are white and the remainder yellow; in the female the five spots on the wing are in two series, the two upper being nearer the exterior margin, and the three lower are nearer the base; in other words, they do not form a continuous line as in the male. This species has been confounded, in collections, with *cofaqui*, Strecker, which was described from a female. The male of *cofaqui* is marked practically like the female, but the male has the long hair on the inferiors as in the new species. This long hair is also conspicuous in *Streckeri* at the base of the superiors below. This fine species is described from two males in my own collection; one is from Texas and the other probably from Arizona (the exact locality not being known in either case), and a pair in the collection of Dr. Herman Strecker, of Reading, Pa.; one of these is from Texas, and was collected by the late Jacob Boll, and the other from the San Juan reconnaissance, made under the charge of Lieut. Ruffner, in Colorado, in 1877. Of the four described species, *Neumoegeni* is very different from the other three; *yucca* may be known by the peculiar white spot on the anterior margin of the secondaries below. The spots on the superiors above in *Streckeri* are small, and all practically of one size, and form a straight row, while in *cofaqui* the spots are very large, being a quarter of an inch in length; the secondaries above are also spotted in this species. *Streckeri* differs in colour very much from the other species, not being nearly so red.

LOSSES CAUSED BY DESTRUCTIVE INSECTS.

In the May number of *The Century*, Vol. L., No. 1, p. 89, 1895, there is recorded an item of interest to economic entomologists that is liable to be overlooked and lost, although it deserves a better fate. In an article by Mr. William E. Smythe, on "The Conquest of Arid America," there is given a carefully-compiled table of all of the expenditures of "the Church of Jesus Christ of Latter Day Saints," in Utah, the figures being furnished, at the author's request, by Mr. A. Milton Musser, Church historian, and by him submitted to the inspection of the Presidents and Bishops of the Church, prior to publication. The figures cover a period of forty years, and the estimates are stated to be "as fair as they can be given." The one to which the attention of entomologists is here directed reads as follows:—

"Loss sustained by crickets, locusts and grasshoppers, \$2,500,000."

It is interesting to compare this amount with other items. For instance, the loss by fire during the same period was but \$800,000; building of churches and schools, \$4,000,000, or less than double the loss by insect depredations; the cost of local telegraph and railroad lines, \$3,000,000; cost of immigration and sustaining the poor, \$8,000,000; taxes, \$8,000,000.

As the estimates cover the first 40 years of the existence of the settlement, the figures are of especial value to us, as this is the period during which it is always the most difficult to obtain information.

F. M. WEBSTER, Wooster, Ohio.

NOTE AS TO CRITICISMS OF A PAPER PUBLISHED BY MR. A. G. BUTLER, ON "THE NATURAL AFFINITIES OF THE LEPIDOPTERA REFERRED TO THE GENUS *ACRONYCTA*," IN THE TRANSACTIONS OF THE NEW YORK ACADEMY OF SCIENCES.

Mr. Harrison G. Dyar says (p. 57), in his references to a paper by Mr. A. G. Butler, on "The Natural Affinities of the Lepidoptera referred to the Genus *Acronycta*," that he has "not seen any refutation of Mr. Butler's arguments, etc.," and comes to the conclusion that "Mr. Butler's position appears to have been ill-founded." If Mr. Dyar refers to *The Entomologists' Record*, Vol. I., pp. 269-271; Vol. II., p. 82; Vol. II., pp. 104-106; Vol. II., p. 150; *British Noctuae and Their Varieties*, Vol. IV., p. xxiii., he will find that Mr. Butler's paper has been very severely criticised by various entomologists, quite sufficiently, I have no doubt, to have deterred any one in touch with entomological work in Europe from "adopting his conclusions."

J. W. TUTT, Westcombe Hill, London, S. E.

THE COLEOPTERA OF CANADA.

BY H. F. WICKHAM, IOWA CITY, IOWA.

XI. THE HYDROPHILIDÆ OF ONTARIO AND QUEBEC.

These water-beetles differ from Dytiscidæ especially in having the antennæ terminated by a distinct club instead of being filiform; and while, as the name implies, they are usually found in ponds or streams, they are much more feeble swimmers than the Dytiscids, and are exponents of a more generalized type. Several genera are truly terrestrial in habit, the beetles occurring about decomposing animal matter or in manure. The larvæ somewhat resemble those of the Dytiscidæ in general appearance, but differ so far as my experience goes in having toothed mandibles instead of the single suctional ones characteristic of the other family. Pupation takes place on land in an underground cell, or in a cavity scooped out beneath a stone or piece of wood.

The generic table is based chiefly on the characters used in the LeConte and Horn "Classification," and it is hoped will prove useful. Care must be given the small specimens, and it will be found impracticable to separate them without a good lens. The genera recorded in the Canadian lists separate as follows:—

- A. Prothorax narrower than the elytra, and usually narrowed behind; form elongate, sculpture usually rough.
 - b. Elytra with ten striæ or rows of punctures, max. palpi moderate.
 - c. Last joint of max. palpi longer than preceding.
 - Antennæ 9-jointed..... *Helophorus*.
 - Antennæ 7-jointed..... *Hydrochus*.
 - cc. Last joint of max. palpi shorter than preceding. . *Ochthebius*.
 - bb. Elytra with more than ten rows of punctures, maxillary palpi very long..... *Hydrana*.
- AA. Prothorax at base as wide as the elytra, narrowed anteriorly. Form usually convex, oval or elliptical, sculpture usually weak.
 - d. Middle and hind tarsi with first joint short.
 - e. Tarsi compressed, metasternum with distinct spine.
 - f. Prosternum sulcate, metasternal spine long.
 - Large species (over 1 in. long), last joint of max. palpi shorter than the preceding. *Hydrophilus*.
 - Smaller species (less than ½ in. long), last joint of max. palpi equal to or longer than preceding. *Tropisternus*.
 - ff. Prosternum carinate, metasternal spine short. *Hydrocharis*.

- ee. Tarsi not compressed, metasternum not prolonged into a spine.
- g. Last ventral segment emarginate. *Berosus*.
- gg. Last ventral not emarginate.
- h. First and second ventrals concealed by plates. *Chatarthria*.
- hh. Ventral segments uncovered.
- i. Antennæ 8-jointed, colours mostly pale, form rounded, convex. *Laccobius*.
- ii. Antennæ 9-jointed, colours usually dark.
- j. Terminal joint of max. palpi shorter than preceding.
- k. Tarsi 5-jointed on all the feet.
Mesosternum with longitudinal lamina *Philhydrus*.
Mesosternum with slight median tuberosity *Helochares*.
- kk. Tarsi 4-jointed on middle and hind feet.
Mesosternum with feeble transverse carina, claws simple. *Cymbiodyta*.
Mesosternum with compressed conical process; claws broadly toothed at base. *Helocombus*.
- jj. Terminal joint of max. palpi longer than the preceding.
Elytra striate or striato-punctate. . . *Hydrobius*.
Elytral punctuation confused. . . *Crenophilus*.
- dd. Middle and hind tarsi with the first joint elongate.
- i. Mesosternum narrow, prosternum carinate.
Larger species; scutel elongate. *Sphæridium*.
Smaller species; scutel equilateral. *Cercyon*.
- ii. Mesosternum very wide, prosternum with elevated flattened median area.
Prothorax margined. *Megasternum*.
Prothorax not margined. *Cryptopleurum*.

HELOPHORUS, Fabr.

These insects are of a more or less elongate form and rough sculpture; they may be found in numbers by stirring up the bottom near the banks of pools, when the beetles will float to the top of the water,

where they may easily be seen and taken, since they swim very poorly, and are unable to dive rapidly. The species reported from Old Canada are eight in number, one of which (*obscurus*) may be erroneously identified, having been originally described from the Colorado River. The differential characters are:—

- A. Size larger (.23 in.), head and thorax shining, sparsely punctulate, the latter sparsely granulate at sides, median sulcus slightly undulate. *oblongus*, Lec.
- AA. Size less (.13-.18 in.).
- b. Elytra tuberculate (.13 in.). *tuberculatus*, Gyll.
- bb. Elytra not tuberculate, alternate interspaces higher (.13 in.). *inquinatus*, Mann.
- bbb. Elytral interspaces not tuberculate nor alternating.
- c. Hind angles of thorax obtuse.
- d. Sides of thorax rounded in front, nearly straight behind (.18 in.). *lacustris*, Lec.
- dd. Sides of thorax regularly rounded.
- Legs testaceous, median thoracic sulcus undulate (.17 in.). *obscurus*, Lec.
- Legs piceous, tibiae and tarsi testaceous, median thoracic sulcus nearly straight (.12 in.). *nitidulus*, Lec.
- cc. Hind angles of thorax rectangular.
- Thorax not narrowed at base, sides nearly straight, elytra clouded with fuscous (.12 in.). *linearis*, Lec.
- Thorax slightly narrowed at base, sides subsinuate, elytra with fuscous markings, of which an inverted post-median sutural V- and two spots each side are most obvious (.10-.15 in.). *lineatus*, Say.
- HYDROCHUS, Leach.

Four species which are found in the same situations as *Helophorus* belong here, and, while differing considerably in facies from that genus, would at once be recognized as allied to it. The thorax is much narrower than the elytra, and the breadth only about equal to, or very slightly exceeding, the length.

- A. Smaller (.10 in.), elytral interstices not distinctly alternating, nor interrupted; thorax scarcely narrowed behind, sides straight, scarcely crenulate, basal foveæ deep. *simplex*, Lec.
- AA. Larger (.13-.15 in.), elytral interstices alternating, and more or less interrupted.

b. Striæ as wide or wider than the interstices.

Sides of thorax sinuate (.15 in.) *squamifer*, Lec.

Sides of thorax crenulate (.13 in.) *excavatus*, Lec.

bb. Striæ narrower than the interstices (.13 in.) . . *subcupreus*, Rand.

OCHTHEBIUS, Leach.

These are smaller insects than the preceding, though of much the same habits. In some parts of the Southwest they are so numerous that thousands of specimens may be taken from a small pool by stirring up the borders. They are particularly partial (in my experience) to such small ponds as have been formed by the partial drying of a small stream fed by springs. Dr. Horn has found them most abundant in shallow running water, adhering to the under side of stones. All are rather flattened, somewhat roughly sculptured little beetles, some of which look like very small *Helophori*, while others remind us by their shape of *Corticaria*. The table is extracted almost entirely from that lately published by Dr. Horn in the Trans. Am. Ento. Soc. for 1890.

A. Thorax abruptly sinuate from middle, or deeply notched near the hind angles. Transparent border broad.

b. Thorax with well-marked discal foveæ.

Disk of thorax sparsely punctate (.06-.08 in.) . . *discretus*, Lec.

Disk of thorax impunctate (.07 in.) *nitidus*, Lec.

bb. Thorax without discal foveæ, coarsely punctate

(.08 in.) *cribricollis*, Lec.

AA. Thorax gradually sinuately narrowed from apex to base, transparent border narrow.

Discal impressions of thorax forming continuous line ; lateral foveæ broad and moderately deep (.06 in.) *sculptus*, Lec.

Discal impressions very vague, the posterior only distinct ; the lateral foveæ in the form of indistinct sinuous impressions (.06-.08 in.) *Holmbergi*, Mann.

HYDRENA, Kug.

H. pennsylvanica, Kies., is found under the same conditions as *Helophorus* and *Ochthebius*. It is a small blackish insect (.075 in.), the feet, palpi and margin of thorax testaceous. Thorax sub-quadrate, densely punctured, impressed at sides, elytra sub-opaque, with rows of sub-quadrate punctures.

HYDROPHILUS, Geoff.

Includes two very large black insects, the giants of the family as represented in America. They separate thus :—

Less elongate, more convex, abdomen pubescent, the last three segments narrowly smooth at middle, without yellow spots at sides (1.25 in.).....*ovatus*, G. & H.

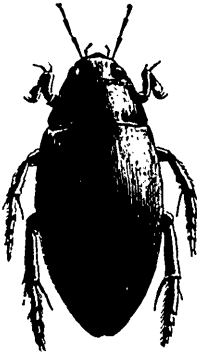


FIG. 13.

More elongate, less convex, first abdominal segment pubescent, the remainder broadly smooth at middle, and pubescent only at sides, which are ornamented with large triangular yellow spots (1.30-1.45 in.), (fig. 13).*triangularis*, Say.

TROPISTERNUS, Sol.

The three species on the Canadian lists are very smooth, shining insects, mostly black above, and often extremely common in ponds. They are among the best swimmers of the family.

Sides of thorax and elytra yellow

(.33 in.).....*nimbatus*, Say.

Entirely black above.

Surface finely and equally punctured (.40 in.).....*glaber*, Hbst.

Surface unequally and more coarsely punctured (.35 in.)*mixtus*, Lec.

HYDROCHARIS, Latr.

H. obtusatus, Say, represents this genus. It is easily recognized by the size (.60 in.), and by the elytra being so obtuse behind that the posterior portion of the body is more blunt than the anterior.

BEROSUS, Leach.

Very convex, rather elongate beetles of pale colours, with darker maculations in the form of thoracic and elytral spots. Quite possibly the record of *infuscatus* may be incorrect.

Abdomen cristate in ♂, the fifth segment with one tooth at middle (.16 in.).....*peregrinus*, Hbst.

Abdomen never cristate, fifth segment bidentate at middle.

Elytral striæ nearly obliterated on disk (.20-.24 in.).....*infuscatus*, Lec.

Elytral striæ distinct and punctured on disk (.16-.20 in.).....*striatus*, Say.

CHÆTARTHRIA, Steph.

Two very small convex species, .05 or .06 in. long, are representatives of this genus. They occur on the margins of streams and ponds, and separate easily thus:—

Black above.....*nigrella*, Lec.

Thorax more or less piceous, elytra testaceous.....*pallida*, Lec.

LACCOBIUS, Er.

L. agilis, Rand., is about .10 in. long, head and thorax blackish, elytra pale, clouded with dusky. Body beneath black, feet pale. It is common near the banks in small ponds.

PRELIMINARY STUDIES IN SIPHONAPTERA.—VI.

BY CARL F. BAKER, FORT COLLINS, COLO.

Genus *Hystrichopsylla*, Tschb.

1880. Taschenberg, Die Flohe, p. 83.

This genus has but a single species:—

Hystrichopsylla obtusiceps, Ritsema.

1826. Curtis, Brit. Ent., III., No. 114 (*Pulex talpæ*).

1831. Macquart, Ann. d. Sci. Nat., XXII., p. 405 (*Pulex terrestris*).

1868. Ritsema, Tijds. voor Entom., 2 ser. III., p. 173, (*Pulex obtusiceps*).

1880. Taschenberg, Die Flohe, p. 83 (*Hystrichopsylla obtusiceps*).

This remarkable flea has a heavier covering of spines and bristles than occurs in any other species. The head combs are on the discs of the cheeks with the spines pointing backward (as in *Typhlopsylla gracilis* and *fraterna*), instead of on the lower edges, there being 10 spines on either side. The first joint of the maxillary palpi is the longest. Pronotal comb with 20 spines on either side. The comb on the first abdominal segment consists of 20 spines on either side; that on the second segment, of 12 on either side, and that on the third segment, of 7 on either side. The tarsi are slender. Colour, chestnut-brown. Length of male, 3.5 mm.; of female, 5–5.5 mm. It has been reported as occurring on *Talpa europæa* and *Arvicola arvalis*, in various parts of Europe.

Genus *Typhlopsylla*, Tschb.

1880. Taschenberg, Die Flohe, p. 86.

TABLE OF SPECIES.*

- I. Head with a comb of spines.....*A*.
 II. Head without a comb of spines.....*K*.
 A. Head not unusually elongated; maxillæ triangular; head comb

* In this table I have followed Taschenberg very closely, as there are many of the species which I have never seen. The characterization of this genus in my second paper will have to be modified somewhat, as two species have come into my hands which are entirely without the head combs so general in the genus, and one in which there are five spines in each head comb.

- of 3 to 5 spines on either side; pronotum with a comb, abdomen without any *G.*
- AA. Head elongated and slender; maxillæ quadrangular; head comb of two thick blunt spines on either side; pronotum with a comb, abdomen usually with one or more; in middle tarsi joint 2 as long as 3 and 4 together; in hind tarsi joint 2 as long as 3 and 4 together, and 3 as long as 5; living on bats *B.*
- B. Abdomen without combs; pronotal comb of 10 spines on either side; metanotum with 2 very small teeth on either side; tarsal joints all very narrow; in anterior tarsi joint 1 as long as 2 and 3 together, 3 as long as 5 and somewhat more than one-half as long as 2, which is one-third shorter than 1, while 4 is one-half as long as 2; in hind tarsi joint 1 as long as all remaining joints together and as long as tibiæ; length, 3 mm. *uripectinata.*
- BB. Abdomen with one or more comb-bearing segments *C.*
- C. Abdomen with 1 to 5 comb-bearing segments *D.*
- CC. Abdomen with 7 comb-bearing segments; first 4 with 9 spines on a side, last 3 with 5 on a side; each segment bearing a single row of bristles; eyes entirely absent; antennal groove in hinder half of head; maxillæ narrow, almost rectangular; joint 1 of maxillary palpi longer than either of last three; pronotal comb of 14 spines on either side; metanotum with 12 short teeth on either side; legs slender and thin, proximal end of first femora with 7 very small teeth; in anterior tarsi joint 4 is the shortest, 2 is as long as 5, but much more slender, 3 about as long as 1; in middle tarsi joint 5 is longer than 2; in posterior tarsi joint 1 is one-third longer than 5, which is as long as 2 and as long as 3 and 4 together; male claspers lamellar and rounded on upper edge; colour, yellowish-brown; length, 2.5-3 mm. *octactenus.*
- D. Abdomen with 1 comb-bearing segment *F.*
- DD. Abdomen with 3 or 5 comb-bearing segments *E.*
- E. Abdomen with 5 comb-bearing segments; 3 of the abdominal combs with 12 spines on either side; pronotal comb of 12 spines on either side; metanotum with 7 teeth on either side; all other details same as in *octactenus*; length, 2 mm., *hexactenus.*
- EE. Abdomen with 3 (the first, second and seventh) comb-bearing segments, each comb with 10 to 12 spines on a side; those on first and second short and thick, on the seventh thin and sharp;

- a rudimentary eye barely visible; maxillæ not so rectangular as in *octactenus*, somewhat obliquely cut off below; pronotal comb of 14 to 15 spines; metanotum with 7 teeth on either side; in anterior tarsi joint 1 as long as 5, as long as 2 and as long as 3 and 4 together, 5 is much the thickest; in posterior tarsi joint 1 as long as 2, 3 and 4 together, 2 as long as 3 and 4 together, 5 somewhat shorter; length, 2-3 mm. *pentactenus*.
- F. Abdomen with the seventh segment, only, comb-bearing; length, 2 mm. *dictenus*.
- G. Head comb on anterior edge of antennal groove, the spines pointing straight backward. *J*.
- GG. Head comb in normal position on lower edge of cheeks, the spines pointing downward and backward. *H*.
- H. Pronotal comb of 7 to 9 spines on either side; head comb of usually 3, sometimes 4, spines on either side; with a very rudimentary eye; abdominal segments with 2 dorsal rows of bristles; in middle tarsi joint 1 equals 5; in posterior tarsi joint 1 is one-third longer than 2. *I*.
- HH. Pronotal comb of 11 spines on either side; head comb of 4 spines on either side; maxillæ short triangular; maxillary palpi with joints of nearly equal length; abdominal segments each with one ventral and two dorsal rows of bristles; legs with numerous short spines; in middle tarsi joint 2 is somewhat shorter than 1 and somewhat longer than 5; in posterior tarsi joint 1 is a half longer than 2; colour, yellowish-brown; length, 2 mm. *musculi*.
- I. Pronotal comb of 7 spines on either side; head comb of 3, sometimes 4, spines on either side; maxillæ long and acute; male claspers in the form of two long sugar-loaf plates; colour, pitch-brown; length, 3 mm. *caucasica*.
- II. Pronotal comb of 7 to 9 spines on either side; head comb of 3 spines on either side; male claspers boot-shaped, the sole turned up; colour, dark brown; length, 2.5 mm. *assimilis*.
- J. Head comb of 4 spines; the two upper spines of head comb much longer than the lower; pronotal comb of 9 spines on either side; proportions of tarsal joints as in *caucasica*; male claspers blunt, of the shape of a "ninepin or a cucumber": colour, light brown; length of male, 2-2.5 mm.; of female, 3 mm. *gracilis*.

- JJ. Head comb of 5 spines ; upper spines of head comb of same length as lowest ; pronotal comb of 14 spines on either side ; male claspers long, edges nearly parallel, slightly broadening towards tips, obliquely cut off at ends ; colour, light brown ; length of male, 2 mm. ; of female, 2.5 mm. . . . *fraterna*, n. sp.
- K. Vertex strongly produced, rounded, face retreating ; head with numerous short, very strong, spine-like bristles, all pointing downward and backward ; antennæ with numerous bristles on the third joint, arising from the lower third and exceeding the joint, bristles on joint 2 very short ; mandibles exceeding the anterior trochanters ; pronotal comb of 16 spines ; leg spines weak except on the tibiæ and anterior coxæ ; on the anterior coxæ they resemble those on the head ; hind femora without a row of bristles on the side ; in middle tarsi joint 2 equals 5 ; in hind tarsi joint 1 is longer than 2, 3 and 4 together, while 5 is a half longer than 3 ; abdominal segments each with one dorsal and one ventral row of bristles, each row with 4 or 5 bristles, those in the ventral rows very strong ; claspers of male long, linear, edges parallel, rectangular at the end ; colour, reddish-brown ; length of male, 1.5 mm. ; of female, 2.5 mm. . . *alpina*, n. sp.
- KK. Vertex evenly rounded from occiput to mouth, slightly flattened above in male ; head with very few weak bristles ; bristles on joint 2 of antennæ longer than third joint, which is without bristles ; mandibles attaining three-fourths of anterior coxæ ; pronotal comb of 18 to 22 spines ; leg spines strong on tibiæ and hind tarsi ; hind femora with a row of bristles on the side ; in middle tarsi joint 2 is longer than 5 ; in hind tarsi joint 1 is about as long as 2 and 3 together, while 5 is shorter than 3 ; abdominal segments each with two dorsal and two ventral rows of numerous bristles, the second dorsal row with 12 to 14 bristles, the ventral rows with nearly as many, ventral bristles not stronger than dorsal ; male claspers long, linear, edges not parallel, end somewhat obliquely cut off, rounded ; colour, brown ; length of male, 2.25 mm. ; of female, 3-3.25 mm., *americana*, n. sp.

Typhlopsylla unipectinata, Tschb.

1880. Taschenberg, Die Flohe, p. 91.

Typhlopsylla octactenus, Kol.

1856. Kolenati, Parasit. d. Chirop., p. 31 (*Ceratopsyllus octactenus*).

Typhlopsylla hexactenus, Kol.

1856. Kolenati, l. c., p. 51 (*Ceratopsyllus hexactenus*).

Typhlopsylla pentactenus, Kol.

1856. Kolenati, l. c., p. 32 (*Ceratopsyllus pentactenus*).

Typhlopsylla dictenus, Kol.

1856. Kolenati, l. c., p. 32 (*Ceratopsyllus dictenus*).

The above five species of *Typhlopsylla* are all bat fleas, and have been found on a number of kinds of bats in various parts of Europe. I regret to say that I have not been able to obtain any bat fleas from this side of the water.

Typhlopsylla musculi, Duges.

1832. Duges, Ann. d. Sci. Nat. XXVIII., p. 163 (*Pulex musculi*).

1880. Taschenberg, Die Flohe, p. 92 (*Typhlopsylla musculi*).

This species has been taken on various mice and rats in Europe. I have seen no fleas from either mice or rats taken in America.

Typhlopsylla caucasica, Tschb.

1840. Motschulsky, Bull. Soc. imp. Moscow, p. 169 (*Pulex typhlus*).

1880. Taschenberg, Die Flohe, p. 94 (*Typhlopsylla caucasica*).

"Found by Motschulsky on *Spalax typhlus* in the Caucasian Steppes."

Typhlopsylla assimilis, Tschb.

1880. Taschenberg, Die Flohe, p. 95.

Found in Europe on *Sorex vulgaris*, *Talpa europæa*, *Mus sylvaticus*, and *Arvicola arvalis*. I have specimens from Lincoln, Nebr., taken on mole (Brumer); from Ames, Iowa, taken on *Scolops argentatus* (Osborn); and I have found the same species at Lansing, Mich., on the common garden mole. In the male the head above is very slightly concave (as it is in most Pulicidæ), not convex as figured by Taschenberg, nor does the face slope conspicuously downward and backward in either male or female, but meets the cheek margin at little greater than a right angle.

Typhlopsylla gracilis, Tschb.

1880. Taschenberg, Die Flohe, p. 96.

Found in Europe on *Talpa europæa* and *Sorex vulgaris*.

Typhlopsylla fraternæ, n. sp.

I have collected specimens of this very distinct species at Lansing, Mich., on the common garden mole, and have also received a specimen from Prof. J. M. Aldrich, collected at Brookings, S. D., the host not given.

Typhlopsylla alpina, n. sp.

A very unique flea, collected by Prof. Bruner at Georgetown, Colo., on Mountain Rat. The very conspicuous "bristles" of the head, and anterior coxæ, are short and spine-like, thus differing from those in any other flea I have met with. It is the most well-marked species of the genus.

Typhlopsylla americana, n. sp.

This seems to be a common species, at least west of the Mississippi. I have specimens from Ames, Iowa, taken on *Geomys bursarius* (Osborn). At Fort Collins I have found it on a large brown mole, and Prof. Gillette has taken it at the same place on the pocket gopher. Prof. Aldrich sent me a specimen taken at Moscow, Idaho, on *Thomomys talpoides*; it varies from the typical form in having but sixteen spines in the pronotal comb, but is otherwise identical.

(TO BE CONTINUED.)

DESCRIPTIONS OF THE LARVÆ OF CERTAIN
TENTHREDINIDÆ.

BY HARRISON G. DYAR, A. M., NEW YORK.

Cladius (Trichiocampus) gregarius, n. sp.

Allied to *Cladius viminalis*, Fallen. The larval habits are also identical, as seen by Dr. J. A. Lintner's account of *viminalis* in his Fourth Report, p. 44 (as *Aulacomerus lutescens*). The fly, however, is differently coloured; the larva differs but slightly, in that the lateral black spots are larger than the subdorsal ones, whereas in *viminalis* the reverse appears to be the case.

Male.—Basal joint of flagellum of antennæ with a projection on its lower side, the succeeding joints somewhat obliquely set, but simple, all densely pilose; shining black throughout, except the legs, which are pale white outwardly; coxæ, trochanters, base of femora, whole of posterior femora, and all the claws, black. The black colour fades outwardly, becoming almost sordid, luteous, not sharply separated from the white parts. Basal two-thirds of fore wing and nearly the whole of hind wing dark smoky black; the veins and stigma black. Length, 6 mm. Female.—Antennæ simple, the third and fourth joints slightly enlarged at their tips, scarcely pilose at all; coloration as in the male, or the wings rather less smoky; length, 6 mm. There are three submarginal cells, the first obscurely divided near base by an obsolete nervure; lanceolate cell contracted in the middle.

One male and four females bred on *Populus tremuloides* at Keene Valley, N.Y.

Egg.—In slits on both sides of the slender petiole of a leaf, as described by Dr. Lintner for *viminalis*.

First stage.—Head blackish; width, 3 mm. Body all pale, sordid yellowish, warts concolorous, the structure as in the mature larva.

Second stage.—As before. Width of head, .4 mm.

Third stage.—The food shows as a greenish shade. Width of head, .65 mm. The thorax is more yellowish than the abdomen.

Fourth stage.—Head shining black, rounded, mouth rather pointed, the sutures around the mouth pale; width, 1 mm. Abdominal feet present on joints 6-11 and 13, short; thoracic feet just visible from above. Simple, recurved, white hairs, four to five each from low, obscure, concolorous warts, apparently six in two rows above the spiracle on two indistinct annulets, and others more obscure, on the subventral folds. Thorax a little enlarged. Colour yellowish, not shining, the food giving a green tint by transparency, shading to ochreous on thorax and joint 12. A row of little black dots subdorsally (often absent) and a row of large lateral ones, one on each segment. Dorsal vessel dark. Anal plate concolorous with body.

Fifth stage.—Head black or yellow around the clypeus; width, 1.5 mm. Subdorsal and lateral spots large, square, black; anal plate yellow. Otherwise as before. *Cocoon* double; made entirely of soft brownish silk, of the texture of thin paper.

Cladius solitarius, n. sp.

In the absence of a male specimen, I cannot tell to which section of the genus this species is to be referred. The larval characters, however, are very different from those of the preceding species, so that it is probable we have to do with a *Cladius* proper or with *Priophorus*, most probably the latter. The fly differs from the description of *isomera*, Harr., *equalis*, Nort., and *simplicicornis*, Nort.

Female.—Antennæ very minutely pilose, simple. Body shining black, the wings hyaline with black veins; stigma faintly tinged with luteous; the lower inner cell of hind wings does not reach as far as the cell above it, its lower outer angle somewhat pointed. Legs white; the anterior coxæ, middle and posterior coxæ except at tip, the femora

except at base and tip, black ; apex of the tibiae and the tarsi dusky, as also the anterior trochanters, but the middle and posterior trochanters are white. Length, 6 mm.

One female, bred on *Alnus*.

* * * * *

Larva.—*Third stage.*—Sitting flat on the venter, solitary, eating the parenchyma of the leaf from the under side. Head round, shining black, pilose ; width, .5 mm. Abdominal feet on joints 6-11 and 13, thorax a little enlarged, abdominal feet slightly spreading. Segments distinct, rather faintly 3-annulate, annulet 1 small, 2 and 3 with many pale setae, so that the larva is pilose or hairy. Colour translucent whitish, with no yellow tint. The food gives a dark green band by transparency, as far as joint 12. In joint 13 the faeces show black. Thoracic feet faintly yellowish tinged.

Fourth stage.—Head pale whitish, with a black shade at side and vertex ; width, .8 mm. Body whitish, with a faint greenish tinge, densely hairy, the tubercles slight. Alimentary canal gives a dark shade.

Fifth stage.—Head greenish, thickly dotted with brown ; a confluent black patch on clypeus, over eye and above and behind it ; or a patch at vertex and another on side covering the eye and reaching to back of head. Head shining, pilose ; mouth brown ; width, 1 mm. Dorsal region of body olivaceous blackish ; joint 2 anteriorly, sub-ventral region, venter, feet and joint 13 posteriorly, translucent whitish, not shiny ; body pilose, the hairs arising from thickly-placed pale tubercles on each of the three annulets. Hairs rather short and pale.

Cocoon double, made of white or brownish silk, large, and resembling thin paper.

Eriocampa fasciata, Norton.

Fly kindly determined by Mr. A. D. MacGillivray.

Fourth stage.—Exactly like the larva of *Monostegia quercus-coccinea*, Dyar, except that the head and the two posterior pairs of thoracic feet are shining black. Width of head, .55 mm.

Fifth stage.—The same ; width of head, .75 mm.

Sixth stage.—Head and thoracic feet whitish honey-yellow ; width, .75 mm. Body similar, subtranslucent, no longer shiny, finely annulated ; some dorsal watery areas. Sides of thorax bright orange ; ocelli black, mouth brown. The larvae do not eat in this stage, but enter the ground to pupate.

Found on black oak at Plattsburgh, N. Y., and Weehawken, N. J.
In the single specimen bred, the wings are but very faintly smoky.

Blennocampa spirææ, n. sp.

Antennæ as long as head and thorax; third joint about one and one-half times as long as fourth. First recurrent nervure received almost at base of second submarginal cell, second near base of third cell; lanceolate cell petiolate, under wing with no middle cells. Black; tips of femora, all of tibiæ and tarsi, sordid reddish luteous, the claws often smoky; tegulæ black or with the outer half white; two dots behind scutellum, white; wings hyaline, nervures and stigma black, except close to the base, where the nervures are pale. Head and thorax very finely pubescent. Rarely the tibiæ are faintly blackish, especially the anterior pair. Length: ♂, 6 mm.; ♀, 6.5 mm. Four males, five females.

Larva.—Eating the young leaves of *Spiræa salicifolia*, and disappearing before the middle of June; sitting flat on the venter, solitary, but many on a bush. Keene Valley, N. Y. Head pale greenish, not shining, mouth brown, ocellus covered by a black spot; width, 1.2 mm. Abdominal feet on joints 6-12 and 13; thorax a little enlarged, body very slightly flattened ventrally and tapering posteriorly. Several little white pointed elevations, like sharp teeth with two cusps; two of them ad-dorsal on each segment, two sub-dorsal, a single 1-cusped dot laterally anteriorly, three in a triangle stigmatically posteriorly and six on sub-ventral fold. Body pale bluish-green, not shining, closely like the leaf in colour.

Last stage.—Head testaceous, hardly shining, eye black; width, 1.2 mm. Body smooth, 5-annulate, pale yellowish-green, scarcely shining and rather opaque. On acquiring this stage, the larvæ enter the earth. The flies appeared the following April.

Monostegia rosæ, Harris.

Larva.—Head higher than wide, angularly pyriform, widest through the eyes. Pale brown, not shining, eye and mouth black; width, 1.0 mm. Abdominal feet present on joints 6-12 and 13 (22 feet); thoracic feet not large, not seen from dorsal view. Body smooth, sub-translucent yellowish, broadly green dorsally from the food showing by transparency, 6-annulate, not shining, without marks. Under a lens, very slight concolorous pointed elevations represent the tubercles. These are faintly blackish towards the extremities.

Last stage.—Perfectly smooth, pale honey-yellow, almost whitish. The larvæ enter the earth on acquiring this stage without feeding.

Monostegia quercus-alba, Norton.

My specimens vary in having one or no middle cells on hind wings. The latter is, in fact, the more common, and the specimens appear to be *Caliroa obsoleta* of Norton. The larvæ, as described by me (CAN. ENT., XXVI., 43), differed from Norton's description in having the head black. I have, however, obtained larvæ like those of true *q.-alba*, and the fly is before me. It was submitted to Mr. MacGillivray, who pronounced it to be *M. q.-coccinea*, but I can scarcely agree with him, as the wings are hyaline.

Monostegia quercus-coccinea, Dyar.

Recent specimens vary in having one or two middle cells on the hind wings. Those with two middle cells seem to fit the description of *Eriocampa fasciata*, Nort., and I may be in error in having described the species as new, provided the larval characters prove illusory.

Eriocampa cerasi, Peck.

My specimens vary in having two or one middle cells on hind wings. One specimen has the lower cell present on one side, the upper present on the other with a portion of the cross-vein of the lower.

Larva common on *Cratægus* sp. and on *Amelanchier canadensis* at Woods' Holl, Mass., in July; imago in August. The larva has been often described. It has a final stage (sixth), in which the head does not grow and the larva does not eat, as in the four preceding species. Widths of head: (1) 0.25 mm. (?) [not measured], (2) 0.35 mm., (3), 0.55 mm., (4) 0.8 mm., (5) 1.1 mm., and (6) 1.1 mm.

The following synopsis will separate the larvæ of this group as far as they are known to me:—

Larva not shining, greenish (Rosa).....*Monostegia rosa*.

Larva shining, slimy.

Larva large, blackish (Pyrus, etc.).....*Eriocampa cerasi*.

Larva smaller, whitish.

Sides of thorax orange tinted (*Quercus coccinea*).

Head black.....*Eriocampa fasciata*.

Head pale.....*Monostegia q.-coccinea*.

Sides of thorax concolorous, whitish (*Quercus alba*).

Head black*.....*Caliroa obsoleta*.

Head pale†.....*Monostegia q.-alba*.

* *M. q.-alba*, CAN. ENT., XXVI., 43.

† *M. q.-alba* of Norton. Fly determined by MacGillivray differently, but I cannot corroborate him.

Harpiphorus tarsatus, Say.

Determined by Mr. MacGillivray as *H. varianus*, but according to Harrington (CAN. ENT., XXV., 59) this name indicates only a variety.

Egg traces below the lower epidermis, but apparently sawed through from the upper side; elliptical patches, well separated, in straight rows parallel to a vein or transverse or irregularly distributed; many on a leaf; size, .8 x 1.2 mm.

First stage.—Head faintly brownish, eye black; width, .4 mm. Body whitish, rather opaque, annulate, not shiny, the food showing distinctly; sub-ventral fold prominent in the centre of each segment; feet on joint 6-12 and 13.

The larvæ sit all in a mass on the back of the leaf, flat on the venter, and eat the parenchyma from below.

Second stage.—The same. Width of head, .55 mm. Later the larvæ rest curled spirally and become covered with a white woolly coating.

Third stage.—Head, .65 mm. No change in colour.

Fourth stage.—Head, .8 mm.

Fifth stage.—Head, 1.1 mm.

Sixth stage.—Head, 1.5 mm.

Seventh stage.—The larvæ rest flat on the back of the leaf, curled, the anal end inside of the spiral and slightly lifted.

Head round, full at the vertex, highest centrally, clypeal sutures well-marked; smooth, black, covered with a white mealy substance nearly obscuring the surface; palpi, an area around the mouth and the distinct antennæ, pale yellowish; ocellus black; width, 1.8 mm. Thoracic feet rather small with black hooks; abdominal ones on joints 6-12, 13, large. Segments rather coarsely 6-annulate, the intersegmental incisures scarcely more distinct; sub-ventral fold well-developed, undulate. Nearly opaque honey-yellow, all the dorsal region to sub-ventral ridge covered with a mealy white secretion, partly or wholly obscuring the surface, or even growing out into filmy threads nearly 1 mm. long. Anal plate small, rounded-quadrate, black.

The white secretion is formed afresh after each moult.

[TO BE CONTINUED.]

Mailed July 2nd, 1895.