

DESCRIPTIONS OF NEW MALLOPHAGA.

E. P. DURRANT.

1. *Physostomum serratum* sp. nov. (Fig. 1, B.)

Female—Length, 4.7 mm., width, 1.3 mm.; wide marginal bands on abdomen with sinuous, dark central line in bands sharply reflexed at posterior part of each segment. Among the largest of the genus.

Head .88 mm. long, .86 mm. wide, evenly rounded at front, which is half as wide as occiput, lateral margins slightly convex, posterior angles incurved, occipital border broadly concave. Palettes rather large, palps extending slightly beyond margin of head, anterior sub-margin convex with a number of hairs. Antennal fossae with broad inner border; ocular notch slight, fleck conspicuous. There are three hairs on lateral border of head, one half way between fleck and angle, one near point of angle, and one as far in front of eye as eye is from angle.

Prothorax much broader than long, greatest width equal to that of head; posterior border convex, lateral margins rounded, with large bristle; marginal extensions narrow and of uniform width; metathorax much longer than prothorax; anterior rounded and slightly swelling, lateral border diverging posteriorly, large bristle at angle. Length of thorax .43 mm., width, .46 mm.

Abdomen with sides slightly swelling at middle, last segment broadly rounded with posterior part expanded; marginal bands broad, with dark-brown line in middle sharply reflexed toward median line at posterior part of each segment except seventh. This whole line, which is characteristic of the genus, has a serrate outline and seems to distinguish the species. The color of legs and head is tawny, except the darker inner border of antennal fossae and small blotches further forward, the abdomen and thorax each a shade darker.

Described from a single specimen in Professor Herbert Osborn's collection, taken from Desert Horned Lark (*Otocoris* sp.) at Ft. Collins, Colo., by J. H. Cowen.

2. *Physostomum sub-hastatum* sp. nov. (Fig. 1, A.)

Female—Length, 3.17 mm., width, .98 mm.; light fulvous, abdomen with dark bands near lateral borders, head and thorax with numerous markings of dark brown, legs same color as body.

Head, length .73 mm., width, .60 mm.; front broad and evenly rounded, margins diverging, slightly undulating, ocular notch small with two small hairs, fleck large; temple extended posteriorly, angle slightly out-turned, one short and two long bristles; occipital margin re-entering, occiput convex; labral lobes prominent, brownish incurved blotch back of lobes; antennal fossae well-marked, interior border with dark-brown band; two curved brown blotches between antennal fossae and those curving in from margin back of palettes; narrow sub-marginal occipital band, light brown; palpi scarcely extending to margin of head.

Thorax, length, .83 mm., width, .65 mm.; prothorax broader than long, narrower than head, lateral margins evenly rounded except at anterior part which is slightly incurved and has two small hairs and a bristle; long bristle at rounded posterior angle; anterior and posterior margins slightly concave; dark brown bands along lateral sub-margins; marginal extensions clear and of even width.

Metathorax longer and wider than prothorax, anterior part covered by it; margins diverging, large swelling near anterior part with three small hairs; large bristle and two small hairs at posterior angle; same

width as first segment of abdomen; narrow brown lateral bands extending toward median line at front; similar incurved lines from lateral lines at middle. Legs large, of same color as head.

Abdomen, sides swelling, seventh segment narrowing, eighth evenly rounded; segments of nearly equal length, transverse margins straight, first, second, and third with one bristle, others with two bristles, at posterior angle; last segment with fringe of small hairs on posterior border; lateral line heavy and brown, broken at sutures with clear diagonal line; eighth segment paler than the others.

Described from specimen in Professor Herbert Osborn's collection, taken from *Pipilo maculatus megalonyx* (Baird) at Ft. Collins, Colo., by C. F. Baker. This species shows a considerable resemblance to *P. subangulatum* Car. in the lines of the thorax extending inward from the lateral line, but it is smaller and the lines are narrower and shorter.

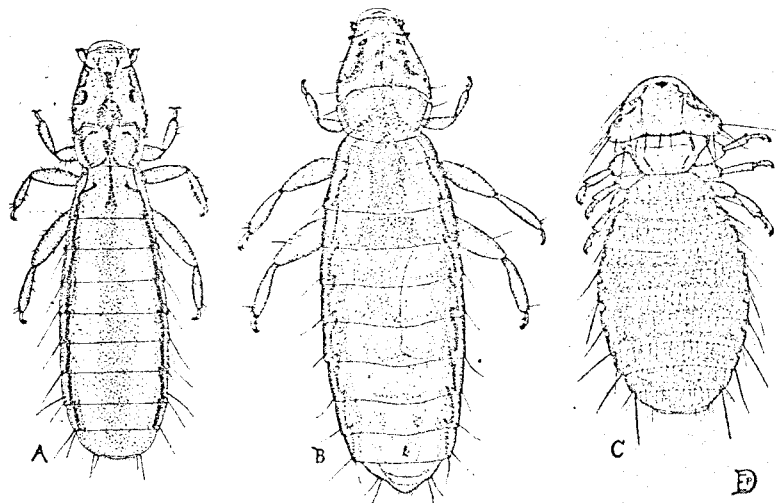


Fig. 1. A, *Physostomum sub-hastatum*, female from *Pipilo maculatus megalonyx* Baird. x 17. B, *Physostomum serratum*, female from *Otocoris* sp. x 13. C, *Menopon aegialitidis*, female from *Aegialitis vocifera*. x 33.

3. *Menopon aegialitidis* sp. nov. (Fig. 1, C.)

Female—Length, 1.30 mm., of golden-brown color, with darker transverse bands on abdomen, metathorax and abdomen having an oval outline, spiracles prominent.

Head, length, .29 mm., width, .48 mm.; front almost semi-circular, temporal lobes broadly rounded, posterior concave, antennae large and partly concealed in fossae, which have the broad inner border marked by a band of brown; ocular fleck large, notch shallow; palpi small; two large bristles in front of ocular notch, a row of fine hairs below it, and three large bristles on temporal lobes; large bristle at base of antennae and five along occipital border; head tawny, a triangular blotch in middle of anterior sub-margin; narrow occipital band.

Thorax, .31 mm. long, .47 mm. wide; greatly constricted at middle. Prothorax twice as broad as long, much narrower than head; anterior angle rounded, two small hairs with bristle between, two more bristles near posterior angle, several small bristles along posterior border; a narrow transverse band one-third of the way from front, with longitudinal bands near each end, diverging bands running half-way to front from posterior border. Metathorax shorter and broader than prothorax with straight diverging sides, also nearly straight anterior and posterior sutures; two long bristles at posterior angle, twelve long hairs along posterior border; a little darker than prothorax. Legs rather large especially the femur, and fulvous.

Abdomen with sides and posterior evenly rounded, wide transverse bands extending from side to side, sutures curved except last one; invaginations in the chitin of the lateral margins of all the segments except the last two produce clear notch-like spaces; one large and one small bristle at posterior angles of all but terminal segment; numerous long hairs on posterior borders of segments; fringe of fine hairs along sub-margin of last segment; last three sutures marked by clear spaces; first four segments have three small hairs on lateral margins.

Described from specimen in Professor Osborn's collection, taken from *Aegialitis vocifera* at Ft. Collins, Colo., by R. C. Stephenson.

This work was carried on in the Zoological Laboratory of Ohio State University under the direction of Professor Herbert Osborn, to whom the writer wishes to express his thanks for valuable assistance.

KEY TO THE SPECIES OF LIVERWORTS RECOGNIZED IN THE SIXTH EDITION OF GRAY'S MANUAL OF BOTANY.

EDO CLAASSEN.

This key may be considered as a continuation of the one published last year in the Ohio Naturalist (Vol. V, p. 312.) Its purpose is therefore the same; it is intended to make the study of the liverworts and their determination more easy. It was thought to be necessary to put into the key more characters than are usually given. Rather than hamper the student in any way in his efforts to determine the liverworts, this extended key is believed to enable him to overcome the obstacles in his path.

Ancura Dumort.

1. Thallus narrow (about 2 mm. wide), palmately and pinnately divided or pinnate or bipinnate. 2. Thallus wider (4 mm. wide or more), simple or irregularly lobed. 4.
2. Calyptra smooth, not tuberculate, more or less hairy or squamulose, obovate-pyriform, about 3 mm. long. *pinnatifida* Nees.
3. Calyptra more or less verrucose or tuberculate. 3.
3. Thallus biconvex with wide margin, formed by a single layer of cells (therefore in transverse section lens-shaped; calyptra cylindrical, 6-8 mm. long. *multifida* Dumort.
- Thallus flat, pellucid, with narrow margin (in transverse section of nearly equal thickness or planoconvex); calyptra pyriform-clavate. *latifrons* Lindb.

4. Thallus simple or slightly lobed; involucre short, beccate; pedicel not folded upon itself. *pinguis* Dumort.
- Thallus irregularly lobed; involucre none; pedicel 16-25 mm. long, sometimes folded upon itself and remaining within the calyptra, the capsule thus appearing sessile. *sessilis* Spreng.
- Anthoceros* Micheli.
- Thallus papillose; spores black, strongly muriculate and sharply angled. *punctatus* L.
- Thallus smooth; spores nearly smooth, yellow, angular. *laccis* L.
- Asterella* Beauv.
- Thallus forking and increasing by joints. Antheridia in sessile lunate disks. Peduncle bearded at base and apex. Spores large, tuberculate, nearly reticulately folded. *hemisphaerica* Beauv.
- Bazzania* S. F. Gray.
- Plant robust; leaves from green to brownish, about 2 mm. long, somewhat deflexed with concave base, their apex 3-toothed; underleaves roundish-quadrangular, 4-6 toothed above and sinuate on the sides. *trilobata* S. F. Gray.
- Plant much smaller; leaves yellowish or dark brown, about 1 mm. long, strongly deflexed, perfectly convex, their apex 2-3 toothed 1'er entire; underleaves suborbicular, bilid, crenate or entire. *deflexa* Underw.
- Blasia* Micheli.
- Thallus simple or forked or stellate, with sinuous margin; fruit from an oval cavity in the costa; involucre mostly none; capsule oval-globose; gemmae globose in flask-shaped receptacles; the scale-like underleaves broad-oval, coarsely dentate, in one longitudinal row. *pusilla* L.
- Blepharostoma* Dumort.
- Stem flaccid, creeping, branched; leaves much smaller than the ramose, forking and awl-shaped involucre leaves; perianth ovate-cylindric. *trichophyllum* Dumort.
- Cephalozia* Dumort.
1. Perianth more or less 3-angled or 3-carinate; leaf cells large (mostly 25-50 μ broad;) plants medium sized. 2.
- Perianth 3-6 angled; leaf cells small (14-20 μ broad); plants small, often minute. 7.
2. Underleaves rarely present, except on fruiting branches. 3.
- Underleaves usually present; leaves rarely subimbricate. *pluvis* Spruce.
3. Leaf lobes straight. 4.
- Leaf lobes connivent or incurved. 5.
4. Dioecious, rarely monoecious; without runners; usually pale; leaf cells opaque; perianth large, widest above middle, unequally ciliolate. *virginiana* Spruce.
- Monoecious; with runners; usually greenish or reddish; leaf cells pellucid; perianth linear-prismatic or fusiform, whitish, denticulate or ciliate. *bicuspidata* Dumort.
5. Leaflobes narrow, incurved. *curcifolia* Dumort.
- Leaflobes broad, short, connivent. 6.
6. Leaves decurrent; perianth linear-fusiform, 3-plaited, when young triangular only above, when mature. *multiflora* Spruce.
- Leaves not decurrent; perianth large, oblong-cylindric, obtusely angled. *planiceps* Underwood.
7. Growing on the ground and on rocks; heteroecious; perianth linear or narrowly fusiform, prismatic, denticulate or subentire; leaves somewhat distant with acute lobes and an almost rec-