DESCRIPTIONS OF NEW SPECIES OF MALLOPHAGA COLLECTED
BY C. H. MERRIAM WHILE IN THE GOVERNMENT GEOLOGICAL
SURVEY OF THE ROCKY MOUNTAINS, PROFESSOR F. V. HAY-
DEN, UNITED STATES GEOLOGIST.

BY A. S. PACKARD, JR., M. D.

Menopon picicola, n. sp. (Fig. 58.)
Body slightly more than twice as long as broad. Head lunate, being
much shorter than wide, well rounded in front, with a lobe on each side.
Antennae short and slender, terminal joint nearly twice as long as penulti-
mate. Head with three long hairs from posterior division, and two
oblique dark spots in the middle. Prothorax with a median square
area half as wide as head, with two rings on each side, making the en-
tire segment three-fourths as wide as head. Abdomen regularly oval,
two-thirds as wide as long, terminal segment large and broad. Segments
convex, with a slight ridge crossing behind the middle of each segment.
Two or three long hairs project from hind edge of each segment, and nu-
merous finer hairs. Legs moderately long, tibiae long, a third longer than
femora; tarsi with second joint long and slender, ending in two large
claws. Pale horn color.

Length .08 inch. Ten specimens.
From Picoides arcticus and P. dor-
salis. (Nos. 290 and 257.) August 26,
1872, at Lower Geyser Basin, Wyoming
Territory. This is more closely
allied to M. citrinella, Denny,* than
any other species I am acquainted with, but differs in the shorter,
broadest head. The form of the prothorax is very different, being
transversely oval instead of squarish, as in M. citrinella.

Goniodes Merriamani, n. sp. (Fig 59; a, male antennae.)
Head about as broad as long, full, convex, broad, and regularly
rounded in front of insertion of antennae. Deeply excavated in middle,
receiving basal two-thirds of basal joint of antennae; on posterior edge
of the notch a prominence, and still posteriorly a large prominence,
giving a square appearance to head posteriorly, which at hinder edge
suddenly contracts where it is articulated to prothorax. Head about
two-thirds as wide as abdomen. Prothorax about half as wide as head.
Abdomen ovate or pear-shaped, being broadest just before the end. It

is whitish, conicous on the edges. Antennae recurved, four-jointed, basal very large, second as long as first is thick, third and fourth slender, subequal; fourth as long as second is thick. Legs stout, second pair with stout spines on inner side of tibia; tarsal joints very indistinct, short, with a long curved claw.

Length, .10 inch. One specimen.


It is very different from G. tetraonis Denny, and closely allied to G. Colechii Denny, especially in the pyriform shape of the abdomen. The head in one species is rather longer and more produced in front of the antennae, the prothorax is rather longer and broader, and the mesothorax wider and shorter in proportion.

**Goniodes mephitidis**, n. sp. (Fig. 60.)

Head short, about as long as broad, well rounded in front, with a narrow curved sinus in the middle; widest behind the middle, with well-marked lateral projections. Two dark spots on each side of the sinus; side of head in front of the projections lined with black. A transverse black line across hind edge of head, ending on each side in two black spots, and ending obscure prolongations anteriorly. Antennae four-jointed; basal joint very large, three outer ones filiform, third considerably longer than second, fourth minute, short. Prothorax conicous, slightly narrower but distinct from mesothoracic segments, the sides of which are produced hook-like beyond it. Abdomen large, orbicular, but little longer than broad, white. Legs white, hind tibia dilated distally, with several long spines on the inner side, one especially large; several long hairs on the outer side. The tarsal joint ends in a curved slender claw as long as itself, seen with the naked eye; head and thorax appear pale testaceous; abdomen white.

Length, .06 inch. Seven specimens.

From a skunk (Mephitis) collected August 13, 1872, at Fire-Hole Basin, Wyoming Territory.

It differs from any species figured by Denny in the notch in front of head, and short, broad lunate mesothoracic segment, and long oval form of abdomen.

**Nymus buteonilus**, n. sp. (Fig. 61.)

A very large species, long and slender; head long, oblong, subtrapezoidal, half as wide in front as at base; front truncate, with prominent rounded lateral wings on each side of head, behind insertation of antennae more prominent than usual. Antennae just reach as far as the front edge of head; four-jointed; two basal joints of much the same size and length, two outer much smaller, fourth slenderer, and a third longer than third. A large, round inflated swelling on under side, just behind the mouth, and behind the single-jointed minute labial palp, apparently forming a sucker to draw month near to skin of host. Mental region behind flattened, rather narrow. Prothorax small, rounded square, incised on each side; a transverse impressed line crossing the anterior third, and, with the longitudinal line, dividing the surface into four square spaces, the two anterior half as long as two posterior. Abdomen, including meso and metathorax, regularly ovalulate, two and a half times as long as wide, with fine long hairs along edge. Legs rather large and long, with tarsi on three hinder pair of legs, basal joints much swollen and enlarged, with a white swollen disk-like under-surface for holding on to skin of host; second joint remarkably long and slender. Edge of head white, and whole body black; front edge of head white, hind edge black, a dark scutellate spot just behind the middle of the head; two round black spots under base of head; two black spots projecting inward at front edge of mesothorax; a brown stripe across hind edge of each abdominal segment, interrupted on anterior four rings by median line of the body. Joints of legs edged with black brown.

Specimens vary much in extent and intensity of dark lines and spots, as usual.

Length, .40 inch. Twelve specimens.

From Betuo Saltamonis, (No. 239.) Collected August 27, 1872, at Lower Geyser Basin, Wyoming Territory.

Diffs remarkably in form and size from any figured by Denny.

I have in describing this species used, for comparison, a specimen of this genus from Goose Lake, Siskiyou County, Cal., (J. Holleman) in which the head is triangular, and the tarsal joints not dilated, and second joint is much shorter and thicker. Its host not indicated.

**Dowphorus syrius**, n. sp. (Fig. 62; a, antennae; b, hind leg.)

Head a little longer than broad, being a little longer than usual; two thirds as wide as abdomen. Mouth cavity deeply excavated. Trabeculae small, acutely pointed, projecting slightly beyond the head. Two oblique chitinuous bands diverge from base of head to upper side of base of trabeculae; antennae slender, of the usual form; five-jointed; fourth joint much shorter than fifth. Prothorax trapezoidal, half as wide as head; mesothorax wide, projecting considerably beyond the succeeding segment; edge more bulging...
is whitish, cornes on the edges. Antennas recurved, four-jointed, basal very large, second as long as first is thick, third and fourth slender, subequal; fourth as long as second is thick. Legs stout, second pair with stout spines on inner side of tibia; tarsal joints very indistinct, short, with a long curved claw.

Length, 10 inch. One specimen.

From Teteo Richland, (No. 219.) Collected August 5, 1872, at North Fork of Snake River, Idaho.

It is very different from G. tetracus Denny, and closely allied to G. Colohic Denny, especially in the pyriform shape of the abdomen. The head in one species is rather longer and more produced in front of the antennae, the prothorax is rather longer and broader, and the mesothorax wider and shorter in proportion.

Goniododes mephisto, n. sp. (Fig. 60.)

Head short, about as long as broad, well rounded in front, with a narrow curved sinus in the middle; widest behind the middle, with well-marked lateral projections. Two dark spots on each side of the sinus; side of head in front of the projections lined with black. A transverse black line across hind edge of head, ending on each side in two black points, and sending obscure prolongations anteriorly. Antennae four-jointed; basal joint very large, three outer ones filiform, third considerably longer than second, fourth minute, short. Prothorax cornes, slightly narrower but distinct from mesothoracic segments, the sides of which are produced hook-like beyond it. Abdomen large, orbicular, but little longer than broad, white. Legs white, hind tibiae dilated distally, with several long spines on the inner side, one especially large; several long hairs on the outer side. The tarsal joint ends in a curved slender claw as long as itself, seen with the naked eye; head and thorax appear pale testaceous; abdomen white.

Length, 06 inch. Seven specimens.

From a skunk (Mephitidae) collected August 13, 1872, at Fire-Hole Basin, Wyoming Territory.

It differs from any species figured by Denny in the notch in front of head, and short, broad lunate mesothoracic segment, and long oval form of abdomen.

Nerioa buttoniana, n. sp. (Fig. 61.)

A very large species, long and slender; head long, oblong, subtrapezoidal, half as wide in front as at base; first truncate, with prominent rounded lateral wings on each side of head, behind insertion of antennae more prominent than usual. Antennae just reach as far as the front edge of head; four-jointed; two basal joints of much the same size and length, two outer much smaller, fourth slenderer, and a third longer than third. A large, round inflated swelling on under side, just behind the mouth, and behind the single-jointed minute labial palpi, apparently forming a sucker to draw blood near to skin of host. Mental region behind this thickened, rather narrow. Prothorax small, rounded square, incised on each side; a transverse impressed line crossing the anterior third, and, with the longitudinal line, dividing the surface into four square spaces, the two anterior half as long as two posterior. Abdomen, including mesothorax, regularly ovallanceolate, two and a half times as long as wide, with fine long hairs along edge. Legs rather large and long, with tarsi on three hinder pair of legs, basal joints much swollen and enlarged, with a white swollen disk-like under-surface for holding on to skin of host; second joint remarkably long and slender. Edge of head white, and whole body black, front edge of head white, hind edge black, a dark scutellate spot just behind the mouth of the head; two round black spots under base of head; two black spots projecting inward from front edge of mesothorax; a brown stripe across hind edge of each abdominal segment, interrupted on anterior four rings by medium line of the body. Joints of legs edged with black brown.

Specimens vary much in extent and intensity of dark lines and spots, as usual.

Length, .40 inch. Twelve specimens.

From Buteo Socavon, (No. 239.) Collected August 27, 1872, at Lower Geyser Basin, Wyoming Territory.

Differs remarkably in form and size from any figured by Denny.

I have in describing this species used, for comparison, a specimen of this genus from Goose Lake, Siskiyou County, Cal., (J. Holleman,) in which the head is triangular, and the tarsal joints not dilated, and second joint is much shorter and thicker. Its host not indicated.

Docophas syrinx, n. sp. (Fig. 62; a, anterior; b, hind leg.

Head a little longer than broad, being a little longer than usual; two-thirds as wide as abdomen. Mouth cavity deeply excavated. Tracheae small, acutely pointed, projecting slightly beyond the head. Two oblique chitinous bands diverge from base of head to upper side of side of tracheae; antenna slender, of the usual form; five-jointed; fourth joint much shorter than fifth. Prothorax trapezoidal, half as wide as head; mesothorax wide, projecting considerably beyond the succeeding segment; edge more bulging...
than others. Abdomen regularly oval, but little broader than long, with the usual triangular pale horny pieces on each side of segments, with a few long hairs, especially toward end of body.

Length, .09 inch. Four specimens.


Of the species figured by Denny, it approaches nearest in the form and shape of the head to D. testudinaria, (Children,) Back's Narrative, &c. It is allied in form to D. australis Denny, but the prothorax is shorter; and to D. ateropes Nitzsch but the head is much broader. From D. communis Nitzsch, it differs considerably, the head being shorter and broader, and the trabecula much smaller, judging from Denny's figures.

DESCRIPTION OF NEW PARASITIC WORMS FOUND IN THE BRAIN AND OTHER PARTS OF BIRDS.

BY A. S. PACKARD, JR., M. D.

Among the zoological specimens collected by Mr. C. H. Merriam in explorations under Professor Hayden in the summer of 1872, were specimens of an apparently undescribed worm found "under the eyes" of a hawk. In describing this worm, we had occasion to compare it with an undescribed species of the same genus of worm in the museum of the Peabody Academy of Science, and found by Mr. Walker in the brain of the night-hawk.

Indeed, one of the most obscure subjects in zoology is the history and development of animal parasites, and especially those which take up their abode in the brain of different animals. Professor Wyman has described, in the "Proceedings of the Boston Society of Natural History" for October 1, 1865, a species of round worm in the brain of seventeen out of nineteen specimens of the Anhinga, or snake-bird, shot in Florida, thus proving that "their presence in the cranial cavity might be called the normal condition of this bird." He remarks that "as parasites have occasionally been found infesting the brain or its membranes in man and animals, but far less frequently than in the other regions of the body. The number of species so far observed is quite small, and are chiefly referable to the genera Anis, Filar, Triham, and Diplostomum, and confined almost wholly to man and domesticated animals, such as the sheep, reindeer, domesticated horse, and ox; and, among wild animals, to the chamois, roebuck, and a few others. That they have not been more frequently seen in the wild species is, without doubt, due to the fact that the brains of these have been so seldom examined for the purpose of detecting them." These worms, "which correspond very nearly, if not identical, with the Eustrongylus papillosus Dieing," were found in every instance coiled up on the back of the cerebellum, their number varying from two to eight. The male is only half as thick as the female, and the end of its body is always more closely coiled than in the female.

This worm is viviparous, the young hatching in the oviduct. Their earlier stages are unknown, but the analogy of the Gordaceans and other worms leads to the supposition that the parasite of the brain of the Anhinga is one of the migratory kinds, and that a part of its life, at least, is passed in a locality quite different from that in which it was detected. The manner in which the transfer of the embryo is effected, outwardly to some other animal, or the water, and then back to another Anhinga, is wholly unknown.

Eustrongylus butonis, n. sp.

This thread-worm seems to agree generically with the species of Eustrongylus, said by Professor Wyman to "correspond very nearly, if not identical, with the Eustrongylus papillosus Dieing," found in the brain of the Anhinga bird of Florida. Our species is, however, much shorter and thicker.

*An abstract, with figures, of this interesting paper may also be found in the "American Naturalist," vol. 2, p. 41, 1892.
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OF THE
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OF
THE TERRITORIES,
EMBRACING
PORTIONS OF MONTANA, IDAHO, WYOMING, AND UTAH;
BEING A REPORT OF PROGRESS OF THE EXPLORATIONS FOR THE YEAR 1872.
BY
F. V. HAYDEN;
United States Geologist.

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