Two females.

Type locality.—Beverly, W. Australia (J. Clark).

Type.—In British Museum.

Each specimen has a puparium mounted with it. A specimen of *M. vittatus* likewise has a puparium, and this shows marked differences from that of *iridomyrmex*. The latter has four longitudinal straight rows of rather large granulose spots. The puparium of *vittatus* is distinctly broader and has eight rows of irregularly placed and much smaller granulose spots.

MALOMETASTERNUM, new genus.

The species for which this genus is erected probably is very closely related to the Australian species placed in the genus *Criorhina* and also to Walker's genus and species *Deineches nigrofulva*. The head and venation in all of these species is very similar to the *Criorhina* type, but the pilosity of the body is not woolly as in *Criorhina* and therefore should not be considered under that genus. The writer would suggest that *nudiventris* Macquart and *spadix* Hardy belong to *Deineches*.

The present species is apparently quite distinct from the above named species in that it possesses on the hind femur a distinct preapical saw-tooth projection and a pair of scutellar tubercles which are not mentioned in the descriptions of the others.

Generic diagnosis.—Based on the male. Eyes holoptic; arista with dorsal basal arista; face projecting downwards, concave between antennae and the prominent facial tubercle; thorax inconspicuously pilose; scutellum three times as broad as long with a pair of widely spaced dorsal tubercles; hind metasternum and hind coxae with long, white and woolly pile; hind coxae greatly enlarged; hind femur greatly enlarged with a prominent preapical and ventral saw-tooth projection (similar to that in *Tropidia*); discal crossvein joining discal cell well beyond its middle; and apical crossvein with a somewhat rounded basal angle, nearly in line with posterior crossvein.

Malometasternum scutellaris, new species.

Male.—A rather large species; ocellar triangle elongate, white pollinose frontal triangle rather small, white pollinose; face entirely white pollinose in front, the jowls shining black; femora and tibiae brownish, hind tibia more yellow; fore and mid tarsi whitish, hind tarsi bright yellow; wings faintly infuscated; abdomen deep brown, apical half of fourth tergite bright reddish yellow.

Type locality.—Townsville, New Queensland (1909, F. P. Dodd).

Type.—In British Museum.

Dissoptera pollinosa Edwards.

Dissoptera pollinosa Edwards, Proc. Zool. Soc. Lond., vol. 20, 1916, p. 410.

This genus and species, originally recorded from New Guinea, is represented in the material at hand by a single female. At first glance the species resembles the genus *Syrphus*. However, it is a close ally of *Eristalis* but may be easily separated therefrom by the straight face, in profile, and yellow scale-like vestiture of the front and mesonotum, that on the face being tomentose. The abdomen has a pair of large (very large on the second) yellow spots at anterior corners of each tergite, fifth tergite entirely yellow.

Length 9 mm.; wing 7 mm.

Cairns, New Queensland (on window, J. F. Illingsworth).

NOTES ON INSECT INHABITANTS OF BIRD HOUSES.

By W. L. McAtee.

DESCRIPTIONS OF A NEW GENUS AND THREE NEW SPECIES OF DIPTERA.

By J. R. Malloch.

In an effort to increase the bird enemies of nut weevils at the experimental chestnut orchard of the Bureau of Plant Industry at Bell, Md., 47 bird boxes were erected there by the Biological Survey in April, 1926. These were inhabited by a variety of tenants of which insects were by no means the least interesting.

Ordinary paper wasps (*Polistes*) built nests in 24 of the bird houses but three of these nests were subsequently torn up by house wrens and in one case incorporated into the nest of the bird. One box was occupied by a colony of yellowjackets (*Vespula*) and one by bumble-bees (*Bremus*) the latter using the nest of an earlier interloper, a deer mouse (*Peromyscus*) in building their own. In these instances the occupants of the houses were either birds or insects, never both together. In another series of cases, however, namely, the boxes in which birds reared or attempted to rear broods, insect occupation was concurrent with that of the birds. The insects (and mites) concerned included parasites of the birds, and scavengers in the nest which themselves attracted other parasites and predators.

Information on the insect occupants of the scavenger and parasite classes is based entirely on laboratory examination of the contents of the bird boxes collected Sept. 23, 1926, probably a month subsequent to the time any of the houses were occupied by birds. Identifications in groups they specialize upon were kindly made by J. R. Malloch and L. L. Buchanan of the

Biological Survey, and August Busck, H. E. Ewing, A. B. Gahan, Chas. T. Greene and S. A. Rohwer of the Bureau of Entomology, and Nathan Banks of the Museum of Comparative Zoology. To favor occupation of the maximum number of boxes by birds during the first season for the project, the contents of the houses were not closely examined during the nesting period. Hence no observations were made on parasites of nestling birds, such as species of *Protocalliphora*. Some of these may have been at work, for mummied young birds were found in four of the nests. In five nests occupied by house wrens, three by bluebirds, one by crested flycatchers, and in three compartments of a house occupied by purple martins were found puparia of Sarcophagids in such numbers as to make it improbable that they could have been produced wholly as scavengers. It may be that further investigation will prove that the usual scavenging habits of these flies are varied to include some degree of parasitism of nestling birds.

It will be of most interest as well as of most value in giving definiteness to the records to treat the bird house insects according to the kind of bird with which they were associated, a procedure followed in succeeding paragraphs.

Purple martin (*Progne subis*). Apparently the purple martin does not clean its quarters at all, so that the scanty layer of weed stalks, grass, and leaves it gathers as a nest is soon exceeded by a mass of remains of the insect food brought to the young. This makes splendid pasturage for scavengers. Among these the most numerous were Psocidae, which fairly swarmed in the nest debris. Next in abundance were various diptera represented chiefly by empty puparia, and thirdly beetles mostly Dermestidae of the genus *Attagenus*. A list of the scavengers grouped by orders follows:

Corrodentia.
- *Troctes divinatorius* Müller, numerous adults.

Lepidoptera.
- *Tinea* sp., 2 rubbed adults, several empty chrysalides, and much webbing.

Coleoptera.
- *Silvanus planatus* Germar, 1 adult.
- *Attagenus* sp., numerous larvae, and their cast skins.

Diptera.
- *Sciara* sp., many empty puparia.
- *Scenopinidae*, numerous larvae.
- *Fannia scalaris* Fabricius, 1 adult.
- *Sarcophaga haemorrhoidalis* Fallen, numerous puparia.
- *Sarcophagid* puparia, many.
- *Neossos marylandica* Malloch, puparia, many; see description later in this paper.

The parasitic forms in the martin house included parasites of the birds themselves, and of insects of the scavenging groups just listed. Fleas and feather mites (*Cheletoides*) swarmed in the nest debris; the chalcid named below, a parasite of the Sarcophagids, was numerous, while the other forms were rare. The parasites included:

Acarina.
- *Cheletoides* sp., many adults and young.
- *Dermanyssus* sp., a few adults.

Suctoria.
- *Ceratophyllus idius* Jordan and Rothschild, many adults. This flea was originally described from the nest of a swallow from British Columbia.

Hymenoptera.
- *Apanteles carpatus* Say, one adult.
- *Pachycrepoideus dubius* Ashmead, numerous adults.

HOUSE WREN (*Troglodytes aedon*).

The scavengers listed by orders below were found in the nests and other debris from 8 bird houses occupied by house wrens.

Acarina.
- *Cheletoides* sp., in 2 nests.

Corrodentia.
- *Troctes divinatorius* Müller, in 3 nests.

Coleoptera.
- *Atheta* sp., nine larvae in 1 nest, and one larva and 18 adults in another.
- *Attagenus* sp., larvae in 5 nests.

Diptera.
- *Sciara* sp., puparia, in 3 nests numerous in 1, one adult identified as *S. impatiens* Johannsen?
- *Sarcophagid* puparia, in 4 nests.
- *Sarcophaga falculata* Pandelle, 26 puparia in 1 nest from which four adults have emerged.
- *Neossos marylandica* Malloch, puparia, in 3 nests, one yielding several.

Lepidoptera.
- *Tinea carnariella* Clemens, in 1 nest.

BLUEBIRD (*Sialia sialis*).

Three houses occupied by bluebirds yielded the following:

Acarina.
- *Cheletoides* sp., a few immature specimens in one nest.

Corrodentia.
- *Troctes divinatorius* Müller, numerous in one nest.

Diptera.
- *Sciara* sp., puparia in 1 nest.
- *Sarcophagid* puparia, in 3 nests, two of them containing many specimens each.
- *Plectops pruinosa* Malloch, new species described later in this paper. Three adults bred from 1 nest, one broken and therefore not used in the description.
- *Neossos marylandica* Malloch, puparia, in one nest.

CRESTED FLYCATCHER (*Myiarchus crinitus*).

A single nest box was occupied by crested flycatchers up to the time their young were about one-third grown. The parents disappeared for unknown reasons and the nestlings perished in the nest. In the material removed from this bird house were found:

Corrodentia.

Troctes divinatorius Müller.

Coleoptera.

Atheta sp., larva.

Diptera.

Hydrotaea sp. (?), one puparium.

Fannia nidicola Malloch, new species described later in this paper, puparia from which 8 adults were bred.

Sarcophagid puparia.

Desmometopa latipes Meigen, one adult.

Neossos marylandica Malloch, puparia.

Lepidoptera.

Tinea sp., 2 chrysalides.

NEOSSOS MALLOCH, new genus.

This genus belongs to the group to which Hendel assigns the family name Trixoscelidae. I hardly care to admit the validity of family rank for this group, but defer a discussion of the matter until opportunity offers in another paper dealing more exclusively with broader phases of taxonomy. In several respects the new genus resembles *Trixosceles*, but it has no mesopleural bristle, the frons is furnished with numerous short setulae, the anterior pair of orbital bristles is more obviously curved outwardly, there is but one strong sternopleural bristle present, and there is a small downwardly directed stigmatal bristle evident.

Genotype, the following species.

Neossos marylandica Malloch, new species.

Male and female.—Head clay-yellow, frons reddish, upper occiput, frontal triangle, and orbits, grey dusted; aristae fuscous. Thorax fuscous, dorsum densely gray dusted, not shining, pleura testaceous, darker above, less densely dusted than dorsum, and slightly shining. Abdomen fuscous, distinctly shining, slightly gray dusted above near base. Legs testaceous. Wings hyaline. Halteres yellow.

Frons about twice as long as its anterior width, the latter about one-third of head width, the width at vertex greater than that at anterior margin, surface hairs short, strong, and quite numerous, orbits reduced to a mere line in front of anterior pair of bristles, the latter outwardly and backwardly directed, as long as upper pair, and but little proximad of middle of frons; ocellar bristles long; postverticals short; third antennal segment not longer than wide; arista almost bare; cheek as high as width of third antennal segment; vibrissae of moderate length. Thoracic dorsocentrals 1+3, the posterior pair longest;

intradorsocentral hairs in 6–8 series, usually with one or more short but distinct bristles in the acrostichal series near suture, the prescutellar pair of acrostichals distinct; inner postalar bristle shorter than outer one; mesopleura bare; sternopleura with one long bristle and a number of hairs; basal pair of scutellar bristles shorter than apical pair. Fore femur with posteroventral bristles distinct only apically; mid femur with one or two short bristles near middle on anterior surface; preapical dorsal bristle present on all tibiae, longest on mid pair. Inner cross vein at a little over one-third from apex of discal cell; ultimate section of fourth vein not over three times as long as penultimate; costal setulae fine but distinct, the longest not much longer than diameter of costal vein.

Length 2 mm.

Type, male, reared from nest of *Progne subis*, collected September 23, 1926, emerged February, 1927; allotype and one female paratype, from debris in same nests (W. L. McAtee).

The puparium of this species is about 2.75 mm. in length, 1 mm. thick, of a glossy testaceous color, and is nearly cylindrical except at anterior extremity where it is rather abruptly flattened above. The surface is finely transversely wrinkled, and without protuberances. I can detect only three minute papillae on each anterior respiratory organ in the specimens before me. Posterior spiracles upon a pair of short stout processes which are not higher than wide, the processes situated upon two tumid areas between which there is a slight longitudinal impression, the distance between the spiracular processes about five times as great as width of one process. The three spiracular slits are small, straight, and radiate from a plainly indicated button.

Plectops pruinosa Malloch, new species.

Male and *female.*—Black, with dense grey dust obscuring ground color of frons, face, thorax, and most of abdomen, the tergites of latter with the shining black ground color showing through the dust apically, but nowhere entirely free from it. Antennae black, basal two segments brownish or reddish; palpi testaceous; interfrontalia brownish. Thorax not vittate. Abdomen with a faint dark dorsocentral vitta. Legs pitchy, femora paler below at apices, and tibiae usually reddish at bases. Wings hyaline. Calyptrae white. Halteres yellow.

Frons in male and female of equal width, at vertex fully one-third of the head width, at anterior margin almost half the head width, orbits differentiated when seen from behind, at middle the grey portion is about three times as wide as the rufous interfrontalia, each orbit with two forwardly directed and one backwardly directed outer bristle on upper half, the last nearest vertex, about five inwardly directed bristles near inner margin below middle, the lowest one nearly opposite apex of second antennal segment, and an isolated backwardly directed bristle a little in front of anterior ocellus, the surfaces with additional fine hairs extending a little below the lower bristle; ocellar bristles strong, porrectly divergent; parafacial narrowly visible from side, bare from opposite