shire and one from Virginia. Later he withdrew the description of the workers and left the species to rest on the descriptions of the winged forms alone. The other species (*S. brevicorne* Mayr) was described at length from worker and female specimens taken in Virginia.

In his revision of the North American STENAMMA, Emery regarded *nearcticum* as a subspecies of the European *S. westwoodi*, and referred to this same form his own subspecies *diecki* with its variety *impressum*.

More recently Forel has again revised the species, prefacing his conclusions with the following remarks: "This subgenus (STENAMMA *sens. str.*) presents an almost inextricable tangle of allied forms. The sculpture of the American species is denser than that of *S. westwoodi* of Europe. I believe that they should be separated specifically, if only for the sake of unravelling the tangle. On the other hand, I doubt whether *S. diecki* Emery really belongs to *nearcticum* and believe that it belongs rather to *brevicorne*. Emery gives the differential characters between the American workers and the typical *Westwoodi* but not between the workers of *nearcticum* and *brevicorne*. Now the fundamental difference between these two species lies in the wings, and none of the specimens described by Emery as *nearcticum*, *diecki*, etc., seem to have possessed these appendages, as the author makes no mention of them. It seems to me more prudent, therefore, since the winged sexes are so little known, to retain the name *nearcticum* only for the female and male described by Mayr, and to consider all the other American forms as races or varieties of *brevicorne* till we have proof of the contrary."

After examining considerable material of STENAMMA from different parts of the United States, from Connecticut to Washington, I am able to establish the truth of Professor Forel's conjecture. Among this material a single male and female collected at Corvallis, Oregon, and sent me by Mr. J. C. Bradley, are without question referable to Mayr's *nearcticum*. These specimens are very dark, with conspicuous apterostigma, and with the same neuration as the European *westwoodi*, *i. e.*, the inner branch of the cubital vein comes off *at the cross-vein*. The males and females of all the other North American forms in my possession (including *diecki* Emery!) have the inner branch of the cubital vein arising *from the middle of the cubital cell*, and therefore undoubtedly belong to *brevicorne* Mayr, as Forel has conjectured. Emery was evidently puzzled by the sculpture of the postpetiole. This is rough and opaque in *brevicorne s. str.*, but smooth and shining in some of the subspecies, like *diecki*. As he had no winged specimens of this subspecies he was thus led to assign it to *westwoodi*.

The synonymy of the two species, as I understand it, should therefore stand as follows:

STENAMMA NEARCTICUM Mayr.

S. nearcticum Mayr, Verh. zool.-bot. gesell. Wien, 1886 p. 447. ♂ ♀ (nec ☿).
? *S. westwoodi* West. subsp. *nearcticum* Emery, Zool. jahrb. Abth. f. syst. bd. 8, 1894, p. 299, 300. ☿.
S. nearcticum Forel, Ann. Soc. ent. Belg., tom. 45, 1901, p. 347. ♂ ♀.

STENAMMA BREVICORNE Mayr.

Aphaenogaster brevicornis Mayr, Verh. zool.-bot. gesell. Wien, 1886, p. 447. ♀ ☿.
Stenamma nearcticum Mayr, ibid. p. 454 ☿ (nec ♂ et ♀).
S. brevicorne Emery, Zool. Jahrb. Abth. f. Syst. Bd. 8, 1894, p. 298. ♂ ♀ ☿.
S. westwoodi subsp. *diecki* Emery and var. *impressum* Emery, ibid. p. 300, 301.
S. brevicorne Forel subsp. *diecki*, var. *impressum*, and subsp. *impar* Forel, Ann. Soc. ent. Belg., t. 45, 1901, p. 347, 348.

I subjoin a table for the identification of the worker forms of *S. brevicorne*, so far as I am able to separate them. The construction of this table has been facilitated by the kindness of Professor Emery, who contributed to my collection types of *diecki* and a specimen of what he took to be the worker of *nearcticum*, both from Yale, British Columbia, and Professor Forel who generously sent me a type of *impar*.

STENAMMA BREVICORNE Mayr.

I. Head, thorax and pedicel opaque; the spaces between the rugae not sufficiently smooth to make the occiput and pronotum appear shining under a low magnification.

A. Larger forms (2.5–4 mm.). Body dark brown or nearly black, except the base and tip of the gaster which are yellow or reddish. Milwaukee (C. E. Brown); Rockford, Illinois (Wheeler); Beatty, Pennsylvania (Rev. P. J. Schmitt), Angora, Pa. (Schmitt); Friday Harbor, Washington, (Kincaid); Lyndon, Vermont (A. L. Melander); Virginia; Pennsylvania (Pergande) *brevicorne* (typical).

B. Smaller forms (2.4–3 mm.). Body brown or red; with a blackish band across the first gastric segment.

1. Sculpture finer than that of the typical *brevicorne*. Length 2.4–2.7 mm. Eye with at least six ommatidia in its greatest diameter. Epinotal spines well developed. Petiolar node more compressed anteroposteriorly

than in *brevicorne* typ. and in profile angular above. Mesoëpinotal depression very marked. Virginia (Forel, Pergande); Beatty, Pa. (Schmitt).
subsp. *impar* Forel.

2. Sculpture and color as in *impar*. Length 2.5–3 mm. Eye very small, with not more than three or four ommatidia in its greatest diameter. Mesoëpinotal depression shallower than in the preceding forms. Epinotal spines small. Petiolar node longer, lower and more rounded than in *impar*. St. Vincent, Pa. (Schmitt). . subsp. *schmittii*, subsp. nov.

II. Back of head, thorax and nodes of pedicel more or less shining, when seen under a low magnification, on account of the coarser rugosity and smoother interrugal spaces; sculpture of the pro- and mesonotum sharp and regular, the rugae straight in the middle and curving on the sides.

1. Length 2.75–3. mm. Color usually reddish brown. Mesoëpinotal depression moderate. Epinotal spines robust, only slightly directed upwards. Yale, B. C. (Emery); Beatty, Pa. (Schmitt); Colebrook, Conn. (Wheeler); Rockford, Ill. (Wheeler); Pacific Grove, Cal. (H. Heath).
subsp. *diecki* Emery.

2. Somewhat larger and darker brown, mesoëpinotal depression broad and deep. Epinotal spines very short, blunt and directed more upwards than in *diecki*. Head less shining behind and thoracic rugae coarser and less numerous. Rich Springs, N. Y. (Emery); Vermont (Forel)
var. *impressum* Emery.

A fine colony of the typical *brevicorne*, comprising all three phases was sent me by Mr. C. E. Brown, who found it under a stone at North Milwaukee, Wis., May 11th, 1901. At Rockford, Ill., I have taken several colonies of this form, rarely under stones, but most frequently under the thick layer of dead leaves and vegetable mould which accumulates in rich, damp woods. In this locality I did not see the winged sexes till July 25th–Aug. 19th. The early capture of these by Mr. Brown would seem to indicate that they sometimes pass the winter in a virgin state in the parental nest.

The colonies are always very small, comprising not more than 20–60 workers and very often even less. They resemble colonies of LEPTOTHORAX, especially when they are found, as is sometimes the case, nesting in hollow acorns embedded in the vegetable mould. The species is very timid, and apparently either nocturnal or subterranean in its habits. This seems to be indicated by the coloration, the small size of the eyes in the workers, and by the fact that I have never seen these insects moving about on the surface of the ground even on dark, cloudy days. They probably feed on small larvae and other animal food. *S. brevicorne*, like *S. nearcticum*, is a sub-boreal form and has not been found up to the present time in

the southern states. It does not even occur among the fine lot of ants kindly collected for me in the high mountains of New Mexico by Prof. and Mrs. T. D. A. Cockerell.

The subspecies *diecki* also occurs at Rockford under the dead leaves in the very same localities as the typical *brevicorne*. Often the nests of the two forms are located only a few feet from each other. The winged sexes of *diecki* are recorded in my notes as occurring from Aug. 15th–19th. They are decidedly smaller than the corresponding sexes of the typical form, and the male is paler, with colorless wings and paler legs and antennae. I could detect no differences in habits between *diecki* and the typical *brevicorne*.

AUSTIN, TEXAS,
April 25th, 1903.

LIFE HISTORIES OF NORTH AMERICAN GEOMETRIDAE.—XLII.

BY HARRISON G. DYAR, WASHINGTON, D. C.

Coniodes plumigeraria Hulst. A general account of the life history has been given by Coquillett, but without detailed descriptions. The species has been repeatedly bred at the Department of Agriculture. Eggs were received from Mr. E. M. Ehrhorn which were collected three miles above Saratoga, Santa Clara County, California, on an apple tree, and from these the life history was made out.

EGGS. Laid in a large mass on a twig on the flat sides. Elliptical, strongly flattened above and below, ends nearly alike, one only a little depressed. Surface minutely shagreened, somewhat transversely so, the reticulations nearly lost, elongate transversely, moderately uniform. Size .8 × .6 × .4 mm. Color dark bronzy brown.

STAGE I. Head rounded, bilobed, clypeus rather high; dull black, epistoma whitish; width about .3 mm. Body robust, rather short, normal, not tapered, segments somewhat angularly widened centrally. Black, a narrow yellowish white line on the sharp substigmatal fold, broken in the incisures; traces of geminate yellowish dorsal line in the incisures of central segments. Tubercles rather large, rounded, brown; setae distinct but not long, brownish; feet black.

STAGE II. Head erect, rounded bilobed, thin anterio-posteriorly at vertex, brown-black, reticulate with darker, scarcely shining; width .5 mm. Body moderate, rather thick, segments annulate, tubercles large and produced but smooth, concolorous, rounded, not tapered, black. Body slaty black, dull; traces of a geminate white dorsal band in the incisures and a broad, diffusely white lined lateral area, ill defined. Feet all black; setae fine, dark, inconspicuous.