

—Mr. Heidemann presented the following paper :

NOTES ON NORTH AMERICAN ARADIDÆ, WITH DESCRIPTIONS OF TWO NEW SPECIES.

By OTTO HEIDEMANN.

Dr. A. D. Hopkins, who is in charge of the forest insect investigations of the Department of Agriculture, turned over to me for identification a lot of hemipterous insects belonging to the family Aradidæ. Some of these were collected by him on his trips to Florida and Texas, but the greater part of them by his assistant, Mr. W. F. Fiske, in North Carolina and Georgia during the year 1903. The collection represents four genera with thirteen well-known species. In addition there are two new species of the genera *Neuroctenus* and *Aneurus*.*

Subfamily ARADINÆ.

Aradus acutus Say.

Two specimens. A female taken at Tryon, N. C., April 17, 1903, beneath the bark of a rotten oak log; and a male, found at Everett, Ga., April 27, 1903, under dry bark of small dead oak.

On these specimens the cinereous spots on the dorsal part of abdomen show very distinctly. The species is not uncommon, frequently being found also around Washington, D. C.

Aradus similis Say.

Two specimens from Tryon, N. C., December 14 and April 9, 1903, beneath bark of elm, girdled last spring; also under bark of dead maple. This common species varies considerably in size. Even dwarf specimens are found.

Aradus crenatus Say.

Six specimens, males and females. All came from Tryon, N. C., April 4, 7, 17, 1903. Found beneath bark of tulip trees (*Liriodendron*), killed last summer; under loose bark of hickory (log dead one year), and beneath bark of maple trees, girdled one year. I once took at Cabin John, Md., numerous specimens of nymphs and adults, by sifting the decaying wood of an old tree stump.

Aradus niger Stal.

Three specimens, male and female, winged form. They were collected by Dr. A. D. Hopkins, at Kirbyville, Texas, November 17, 1902, under dead bark of long-leaf pine (*Pinus palustris*). This species was for a long time unrecognized, but specimens

*The notes on mode of occurrence are mostly taken from field notes furnished me by Dr. A. D. Hopkins.

have lately been compared with Stal's type by Dr. Ch. Aurivilius of Stockholm, and are now preserved in the U. S. National Museum collection.*

Aradus cinnamomeus Panzer.

One specimen, a winged male from Tryon, N. C. Common throughout the spring and early summer on a large pine tree, which had been girdled in March, but which was still alive. Many specimens were caught in the pitch that exuded from the wound. This small *Aradus* belongs also to the palearctic fauna.

Aradus falleni Stal.

A single female specimen, taken at light, May 30, 1903, at Tryon, N. C. This species has a wide range of distribution. Originally described from Rio Janeiro, Brazil, it occurs throughout South America, in Mexico and the West Indies, and has recently been recorded from nearly all of the Southern States. It is known, also, from Indian Territory and the District of Columbia.

Aradus breviatus Bergroth.

One example, a male, collected by Dr. A. D. Hopkins, on *Taxodium* at Baldwin, Fla. This species seems quite rare. I once took two specimens from the crevices of the bark of a living pine tree in the neighborhood of Washington, D. C.

Subfamily BRACHYRRHYNCHINÆ.

Brachyrrhynchus granulatus Say.

Numerous specimens from Tryon, N. C., March 6 and April 9, 1903; found on yellow pine trees, dead some years, and beneath bark of dead maples; on fresh pine boards, attracted with other insects by the odor of resin; and on November 17, 1903, beneath bark of chestnut felled last spring. It was also taken at Savannah, Ga., April 29, and at Cornelia, Ga., November 22, 1903, beneath dead and dry oak bark. The species is very abundant throughout the United States.

Neuroctenus simplex Uhler.

Many specimens, mostly from Tryon, N. C., March 9, November 17, 18, 1903, beneath bark of decaying oak log and beneath bark of oak, which died last summer. The species was also collected at Saluda, N. C., November 25, 1903, in large numbers beneath bark of oak trees girdled last spring; and at Lakeland, Fla., April 7, 1904, on live-oak. This is the commonest species of the *Aradids* known in the United States. Fresh specimens

* Note on *Aradus (Quilnus) niger* Stal. By O. Heidemann. Proc. Ent. Soc. Wash., iv, No. 4, p. 389, 1896-1901; and loc. cit., p. 411.

have the membranous parts of the elytra silvery-white with a short, dark streak at base, sometimes running down to the middle and forming an irregular spot.

***Neuroctenus pseudonymus* Bergroth.**

Neuroctenus pseudonymus Bergroth, Wien Ent. Zeit., xviii, p. 27, 1898.

One example, taken at Saluda, N. C., May 20, beneath bark of a decaying chestnut log. This species was originally described from North Carolina. I have taken it twice in the District of Columbia. It is more robust and broader in body than any other of the North American species of *Neuroctenus*.

***Neuroctenus elongatus* Osborn.**

Neuroctenus elongatus Osborn, Ohio Naturalist, iv, No. 2. p. 21, 1903.

Six specimens, males and females, found at Tryon, N. C., April 3, 1903, beneath bark of decaying chestnut log. Prof. Herbert Osborn kindly examined one of the male specimens and identified it as *N. elongatus*, recently described by him from one male specimen in his paper on *Aradidæ* of Ohio.* Having now a series of specimens of both sexes, I give the following description of the female:

♀.—Anterior process of head reaching very slightly over the apex of first antennal joint; process of the antenniferous tubercles acute; tubercles behind the eyes quite prominent. Pronotum twice as wide as its length; posterior margin nearly straight. Dorsal part of abdomen dark brown, with the lateral margin reddish brown, the posterior edges of the segments on the connexivum a little raised near the incisures. Lateral lobes of the genital segment, as seen from above, slightly longer than the middle lobe, which is obtusely rounded and not broader than the lateral lobes. Length 5.5 to 6 mm.; width 2.25 mm.

Of this species I possess also two examples from Greensburg, Pennsylvania.

***Neuroctenus hopkinsi*, n. sp.**

Dark brownish, irregularly granulated. Anterior process of head deeply notched at tip, reaching the apex of the basal antennal joint; process of the antenniferous tubercles very acute, divaricate; post-ocular part of head rounded, coarsely granulated, not tuberculated laterally. Antennæ as long as the posterior margin of pronotum, finely granulated; the basal joint stout, third joint somewhat more slender than the others and slightly longer, the fourth fusiform and yellowish at tip with a few long, fine hairs. Pronotum trapezoidal; the lateral margins slightly sinuated with the anterior angles rounded, somewhat prominent; posterior margin straight; surface coarsely granulated, a little raised at the an-

* The Ohio Naturalist, iv, No. 2, p. 41, December, 1903.

terior part with two small, glabrous spots near the anterior border. Scutellum broad triangular, rounded at tip with a faint indication of a carina; near the pronotal border is a shallow impression, where the granules are indistinct, arranged in longitudinal rows, while the posterior part of the scutellum is very coarsely transversely wrinkled. Corium more finely irregularly granulated and rugulose; the neuration of the membranous part of elytra very distinct; color black with two yellow spots at base near the scutellum, and one on each side next to the tip of corium. The lateral lobes of the female genitalia are rounded and exactly in the same line with the middle lobe, which is transverse and only a little broader than the lateral lobes. Male genital segment broad, oval, posterior margin more angulate and the lateral lobes very small.

Length of female 5.8 to 6.2 mm.; width of abdomen 2.8 mm.

Length of male 5.8 mm.; width 2.6 mm.

Hendersonville, N. C., May 26, 1903, found under bark of white pine, cut last winter.

Type.—No. 8048, U. S. National Museum.

This species is easily distinguished from *N. simplex* Uhler and from *N. elongatus* Osborn by the conspicuously rugose surface of the posterior part of the scutellum and by the differently shaped, slightly longer terminal genital segment of the male. It seems to be also allied to *N. amplus* Champion and *N. punctulatus* Burmeister, but differs from the former in having the post-ocular part of head not spinous nor tuberculate, and is distinguished from the latter species by the shorter antennæ.

I name the species in honor of Dr. A. D. Hopkins, who has contributed much to our knowledge of the hemipterous insects living under bark of trees.

***Aneurus minutus* Bergroth.**

Aneurus minutus Bergroth, Verh. Zool.-bot. Ges. Wien, 1886, p. 58.

Two specimens, male and female, from Brunswick, Ga., April 26, 1903; found in deserted galleries of a small Cerambycid in dead branches of sumac. This species is recorded from Mexico and the West Indies. I have also seen specimens from Arizona and Southern Florida.

***Aneurus simplex* Uhler.**

One example, a male, from Hoquiam, Washington State. This species has more slender antennæ than any other of the species, and the apical joint is very long. The original specimen is recorded by Prof. Ph. R. Uhler from New England.

***Aneurus fiskei*, n. sp.**

Reddish brown; finely granulate and rugulose. Head slightly longer than broad; front reaching to the middle of first antennal joint, spines of

the antenniferous tubercles acute and curved; part behind the eyes obtusely rounded, edged with a few fine granules; tubercles laterally obsolete. Antennæ not quite twice the length of head; basal joint very stout, broader than the frontal part of head; second joint oval like the basal one, but much smaller and not thicker than the two remaining joints, which are cylindrically formed; third joint nearly equal in length to the first; the terminal one a little longer than the third and second together, covered with fine hairs. Pronotum half as long as wide with a transverse furrow before the middle; the lateral margins anteriorly slightly sinuate; surface very finely granulate, posteriorly rugulose. Scutellum nearly as long as broad, having also the same length as the pronotum in the middle, more coarsely granulated with a short, faint carina anteriorly. The membranous part of elytra rugose and densely granulated, color black; near the middle of corium runs a transverse, yellowish spot, in some specimens obliterated. The terminal genital segment of male convex and long, but extending barely beyond the genital lobes.

Length of female 3.8 to 4 mm.; width 1.8 mm.

Length of male 3.6 to 3.8 mm.; width 1.6 mm.

Tryon, N. C., May 21, 1903 (W. F. Fiske, three specimens); Bedford Co., Pa., August 15, 1901; Paris, Fauquier Co., Va., July 27, 1898; Berkeley Springs, Va., August 20, 1891 (O. Heidemann), and Mount Airy, Ga., September 2, 1894 (E. A. Schwarz). Mr. Fiske's specimens were collected beneath bark of decaying branches of sour-wood (*Oxydendrum*) and also beneath loose bark scales on dry branches of sycamore. The other material was found on dry and decaying branches of trees.

Type.—No. 8049, U. S. National Museum.

This species has some similarity to *A. montanus* Champion, chiefly in the shape of the antennæ, but differs in being smaller and having the post-ocular part of head not spinous. I take pleasure in dedicating it to Mr. W. F. Fiske.

Mr. Heidemann stated, in this connection, that Prof. Herbert Osborn has in preparation a monograph of the Aradidæ. Dr. Hopkins asked Mr. Heidemann what constitutes the food of Aradids. Mr. Heidemann stated that, so far as known, Aradidæ appear to feed upon fungi. Dr. Hopkins said that this, also, was his opinion as to their food habits and he did not believe them insectivorous.* Dr. Ashmead stated that certain Proctotrypid parasites belonging to the genus *Aradophagus* infest the eggs of Aradidæ.

* A previous discussion on this subject is to be found in Proc. Ent. Soc. Wash., iv, No. 4, July 16, 1901, pp. 390 and 391.