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W L Brown Jr

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AMERICA, NORTH OF MEXICO, BASED ON
A STUDY OF THE WORKERS
(HYMN.: FORMICIDÆ)

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A REVISION OF THE GENUS *STRUMIGENYS* OF
AMERICA, NORTH OF MEXICO, BASED ON
A STUDY OF THE WORKERS
(HYMN.: FORMICIDÆ).¹

M. R. SMITH,²

A. & M. College, Mississippi.

Probably no genus of ants has a more world-wide distribution than the genus *Strumigenys*. In spite of this, paradoxical as it may seem, not only are the habits of the ants little known, but undoubtedly there are many species yet to be described. That the genus is poorly represented in the collections in this country is a fact beyond a doubt.

Due to the small size of the workers of the North American species, their obscure color, their slow method of locomotion, and their habit of feigning death, they are a type of ant that is easily apt to be overlooked by collectors. So far as my knowledge goes, the ants are never found above the surface of the soil, another habit which has made the collecting of them still more difficult. The colonies observed by me have all been small, usually numbering only a few dozen individuals at the most. The largest colony I have seen was one of *Strumigenys louisianæ laticephala*, which contained 120 workers, several queens, and many immature forms. The nests of the species of *Strumigenys* are generally found in decaying logs and stumps or in the soil beneath objects lying on the surface.

Usually the colonies are located in the vicinity of the nests of other ants. Whether there is any relationship between the ants, I am unable to say. Some formicologists are inclined to regard the ants as thieves of other ants, with habits similar

¹A contribution from the Mississippi Agricultural Experiment Station.

²ACKNOWLEDGMENTS.—This paper would not have been possible had it not been for the aid and encouragement that I received from many sources. I am especially indebted to Dr. Carl Menozzi, of Chiavari, Italy, who very graciously allowed me the privilege of studying Emery's types. Drs. W. M. Wheeler, W. S. Creighton, W. M. Mann, and W. A. Hilton also kindly furnished me with material, as did the following: Mary Talbot, Helen Green, E. E. Byrd, J. W. Ward, S. W. Simmons, R. M. Graham, G. W. Haug, E. Lott, H. Dietrich, G. L. Bond, and others. To all of these I wish to extend my sincere thanks. The paper would have been far from complete had it not been for Mrs. Sarah Hoke DeBord, who furnished the many illustrations that help to bring out characters too elusive for words. Lastly, I desire to express my sincere gratitude to Professor R. W. Harned, who has as ever very kindly aided and encouraged me in all my studies on ants.

to those of *Solenopsis molesta* Say. It has also been mentioned that the ants, especially those with long mandibles, such as *Str. louisianæ*, might possess the power of leaping forward with them like various species of *Odontomachus*.

Although the generic characters are extremely clear cut as, for instance, the six-segmented antennae, the cordate head, the peculiar type of pilosity, and the usual spongiform processes of both petiole and postpetiole, some of the species at least are not always so distinctive. Like Emery, I have found the head to be the most distinctive part of the body; hence in this paper I have given a large part of the descriptive matter to an enumeration of its characters. In order to bring out additional structures too elusive for words, I have resorted to illustrations.

My excuse for this paper, if there should be one, is that the species of *Strumigenys* are entirely too poorly known in North America. The nine species formerly known for this country were described almost without exception by Emery and Forel. Not only are practically all the types located in foreign countries but also the descriptions of them are in foreign languages in inaccessible magazines. I have been especially fortunate, however, in being able to examine types of the six following species: *Str. rostrata*, *Str. pergandei*, *Str. pulchella*, *Str. ornata*, *Str. clypeata* var. *pilinasis*, *Str. membranifera* subsp. *simillima*. I have not seen types of *Str. clypeata*, *Str. louisianæ*, nor *Str. margaritæ*. Specimens studied by me of the last three species are supposed to be authentic enough, however, for me not to hesitate in basing descriptions on them. I have described the following new forms: *Str. angulata*, *Str. creightoni*, *Str. dietrichi*, *Str. clypeata* var. *laevinasis*, *Str. louisianæ* subsp. *laticephala*, *Str. missouriensis*, and *Str. sculpturata*. Although seven new North American species have thus been added to our fauna and the number of forms in the genus almost doubled, I feel that there are even yet a number of undescribed species.*

*After this article was placed in the hands of the printer, I received several species of *Strumigenys* for identification. None of these were new to science, but since they add a number of distributional records to this paper they are mentioned here.

Strumigenys pergandei Emery was taken by Dr. C. H. Kennedy from an old rotten stump at Shriner's Grove, London, Ohio on September 25, 1931.

Strumigenys pulchella Emery was collected by Miss Mable Schramm from a wet log, in Huron Bog, Willard, Ohio, on August 15, 1931. As well as in a white oak log, 4 miles south of Lowell, Ohio, on September 8, 1931.

The generic description of the *Strumigenys* worker given below has been copied from Emery in *Genera Insectorum*, Fasc. 174C, p. 319 (1922).

Worker.—Not generally varying much in size. Head cordiform, generally longer than wide, not including the mandibles, very noticeably narrowed anteriorly, arc-like emarginate posteriorly, with rounded posterior angles.

Clypeus prolonged over the base of the mandibles, its anterior border curved, rarely straight, occasionally emarginate. Frontal carinae wide, extending above the eye and limiting a scrobe for the base of the antennal scape.

Eye placed under the scrobe.

Mandibles very variable with respect to length, and shape of teeth.

Antennae of 6 segments; first segment of funiculus large, the second and third equal, the two last segments large, especially the last, which is very long; these two segments constitute the club.

Epinotum more or less armed.

Petiole pedunculate, surmounted by a node. Postpetiole rounded or oval. In many species there are at the borders of the node of the petiole and postpetiole, on the ventral surfaces of these segments, even sometimes at the posterior border of the epinotum, some membranous appendages, yellowish and very thin, which, when they are developed, take a spongy aspect."

Wheeler in Bull. Amer. Mus. Nat. Hist., Vol. XLV, p. 668 (1922) divides the genus into two subgenera, namely, *Strumigenys* and *Cephaloxys* F. Smith (= *Trichoscapa* Emery). The keys to the subgenera below are adapted from Wheeler.

KEYS TO SUBGENERA OF STRUMIGENYS.

1. "Mandibles slender, porrect, subparallel; with two or three teeth at the apex; approximate at their base, which is not covered by the short clypeus..... *Strumigenys* sensu strictu.
Mandibles rather short and flattened, narrowly subtriangular; with numerous small teeth along their apical margin; remote at their base, which is covered by the projecting clypeus..... *Cephaloxys* F. Smith (= *Trichoscapa* Emery)".

KEY TO SPECIES OF SUBGENUS STRUMIGENYS.

1. Average size, 2.25 mm.; head not remarkably robust, with rounded occipital lobes; color light ferruginous, with scarcely darker gaster. (Pl. I, Fig. 1)..... *louisianæ* Roger.
Average size 2.5 mm.; head rather robust, with posteriorly broad, somewhat angulate occipital lobes; color dark ferruginous with variably infuscated gaster. (Pl. I, Fig. 2)..... *louisianæ laticephala* subsp. nov.

Strumigenys (S.) *louisianæ* Roger.

Str. louisianæ Roger, Berlin Ent. Zeitschr. Vol. 7, p. 211 (1863) worker.

Str. louisianæ Emery, Zool. Jahrb. Syst. Vol. 8, p. 327 (1895).

Str. unispinulosa Emery, Bull. Soc. Ent. Ital. Vol. 22, p. 67, pl. 7, f. 5 (1890), worker and female.

Worker.—Length: 2.25 mm. (Pl. I, Fig. 1).

Head, excluding mandibles, broad in proportion to its length. Eyes well developed, coarsely faceted. Mandibles somewhat longer than one-half the remainder of the head; masticatory border of each with one small preapical tooth and two large apical teeth, which contain two small teeth between them. Clypeus triangular, much broader than long, with very transverse or truncate anterior border. Antennal scapes moderate, curved but not angulate basally; last segment distinctly longer than the remaining segments of the funiculus. Thorax short, moderately robust; pro-mesonotal suture poorly developed or lacking; meso-epinotal constriction distinct. Epinotal spines about as long as broad, acute apically, directed slightly upward, backward, and outward; each with a very narrow and thin infraspinal lamella. Petiole almost devoid of spongiform processes except for a very narrow area on its posterior border. Postpetiole with a small amount present on its ventral and posterior borders. First gastric segment, in addition to longitudinal striae on the base, reticulately shagreened.

Body reticulate-punctate, subopaque with the following exceptions: mandibles, funiculi, tarsi, and apical portion of gaster.

Head densely, thorax less densely, covered with short depressed, scale-like hairs; petiole, postpetiole, and gaster with longer and more erect clavate hairs.

Ferruginous; appendages lighter, gaster slightly darker.

Strumigenys louisianæ can be readily distinguished from the other species of the genus by the characters here enumerated: (1) its extremely long, slender, sub-cylindrical mandibles, which are peculiarly toothed; (2) its very broad, triangular shaped clypeus, the anterior border of which is decidedly truncate; (3) the large, abundant, scale-like hairs on the head; (4) the almost complete absence of spongiform processes on the petiole and postpetiole; and (5) the reticulate shagreening of the dorsal surface of the first gastric segment.

Type locality: Louisiana (Roger).

Additional localities: Bay Minette River, Baldwin County, Alabama (W. S. Creighton); Sibley, Mississippi (Andrew Fleming).

This species is listed as occurring from Florida westward to Texas and as far south as Costa Rica. Since I have not seen the specimens on which the above records are based, I cannot

be sure whether the specimens in question in many cases were typical *louisianæ* or those of the new subspecies which I am here describing.

This species nests in cavities in rotten logs and stumps or in the soil beneath objects lying on the surface. Mr. Andrew Fleming found winged females present in a nest at Sibley, Mississippi, on July 4. The colony was found in a cavity in an old locust stump.

✓ ***Strumigenys* (S.) *louisianæ* *laticephala* subsp. nov.**

Worker.—Length: 2.5 mm. (Pl. I, Fig. 2).

Very similar to *louisianæ* with the following noticeable differences: namely, (1) its larger size; (2) its relatively broader head; and (3) its darker color. General color deep ferruginous brown with infuscated gaster; the color of the latter variable, often approaching black.

Type locality: Longview, Mississippi (M. R. Smith).

Described from 10 workers. Cotypes are in the collection of the Department of Entomology of the Mississippi A. and M. College and my collection.

Other localities: Louisville, Columbus, West Point, Ripley, and Landon, Mississippi (M. R. Smith, J. W. Ward, E. E. Byrd, G. W. Haug, S. W. Simmons); Decatur, Alabama (W. S. Creighton).

This ant is probably commonly distributed throughout the Gulf States. The exact limits of its distribution are uncertain; it may extend much further than is at present known.

Str. louisianæ subsp. *laticephala* is apparently our most common form of *Str. louisianæ* in Mississippi. Nests of these ants are most commonly found in the soil beneath stones, boards, and other objects. One fine colony was found in a crevice in a well rotted log. A nest found in the soil beneath a flower pot at Columbus, Mississippi, on August 4, contained 120 workers, 2 wingless queens, 2 winged queens, and many immature forms. Another colony found at Longview, Mississippi, contained 94 workers, 1 dealate queen, and many immature forms. At West Point, Mississippi, on June 20, a nest was found which contained 77 workers, 5 males, and 1 dealate queen. Males have been taken at the same locality as late as July 10. Frequently the ants are found nesting in very dry soil. On many occasions we have found them nesting in close proximity to colonies of other ants, such as: *Pheidole*

dentata Mayr, *Pheidole vinelandica* Forel, *Solenopsis molesta* Say, *Prenolepis* (*Nylanderia*) sp., *Ponera trigona* var. *opacior* Forel, *Monomorium minimum* Buckley, *Iridomyrmex humilis* Mayr and others.

KEY TO SPECIES OF SUBGENUS CEPHALOXYLS FOR IDENTIFICATION OF WORKERS.

1. Dorsal surface of first gastric segment clearly shagreened, subopaque; infraspinal lamella absent. (Pl. II, Fig. 7).....*margaritæ* Forel.
Dorsal surface of first gastric segment smooth and shining; infraspinal lamella present..... 2
2. Prothorax not only flattened, but also very strongly marginate laterally; head almost destitute of pilosity except for a pair of short, more or less erect, club-like hairs on the vertex. (Pl. III, Fig. 10),
membranifera subsp. *simillima* Emery
Prothorax not as above; head covered more or less abundantly with variable types of pilosity..... 3
3. Clypeus with a few, very long, erect, enlarged hairs, which give it a decorated effect..... 4
Clypeus, although bearing different types of pilosity, distinctly not as above..... 5
4. Clypeus broadly rounded anteriorly; erect hairs very much enlarged apically. (Pl. II, Fig. 5).....*ornata* Mayr
Clypeus very acute anteriorly; pilosity not suddenly enlarged apically. (Pl. II, Fig. 6).....*dietrichi* sp. nov.
5. Mandibles very much elongated, slender, and somewhat subparallel; each with a distinct tooth on its inner margin just in front of the clypeus, which is followed by a long toothless space, before the apical teeth are reached..... 6
Mandibles only moderately or not at all elongated; if similar to the mandibles described above, the tooth on their inner margin is hidden beneath the clypeus when the mandibles are closed..... 7
6. Clypeus decidedly truncate anteriorly, thus giving the head a subrectangular appearance; antennal scapes not only short but very strongly angulate basally. (Pl. I, Fig. 3).....*angulata* sp. nov.
Clypeus, although moderately truncate anteriorly, not enough to give a decidedly subrectangular appearance to the head; scapes longer and less angulate basally. (Pl. I, Fig. 4).....*pergandei* Emery
7. Anterior border of clypeus either truncate or emarginate..... 12
Anterior border of clypeus rounded..... 8
8. Sides of the head gradually converging anteriorly..... 9
Sides of the head not perceptibly converging anteriorly, more or less subparallel..... 11
9. Clypeus with short, appressed, squamiform or scale-like hairs. (Pl. III, Fig. 9).....*clypeata* Roger
Clypeus with longer, more or less erect hairs..... 10
10. Dorsal surface of clypeus convex, subopaque. (Pl. III, Fig. 12),
clypeata var. *pilinasis* Forel
Dorsal surface of clypeus depressed, surface slightly glabrous. (Pl. III, Fig. 11).....*clypeata laevinasis* var. nov.
11. Head relatively robust in proportion to its length; upper half rugulose or tuberculate; mandibles rather robust, convex. (Pl. IV, Fig. 14),
missouriensis sp. nov.
Head relatively slender in proportion to its length; surface, although reticulate-punctate not tuberculate; mandibles slender and somewhat laterally compressed. (Pl. IV, Fig. 13).....*pulchella* Emery

12. Mandibles somewhat narrowly triangular, flattened dorso-ventrally; each with large, coarse teeth on its entire inner border; clypeus broadly truncate or slightly emarginate. (Pl. II, Fig. 8).....*rostrata* Emery
 Mandibles triangular but shorter; each toothed on only a part of its inner surface; clypeus slightly truncate but never emarginate.....13
 13. Hairs on head rather abundant, distinctly squamiform. (Pl. IV, Fig. 16),
creightoni sp. nov.
 Hairs on head less abundant, longer, and, although slightly enlarged apically, not distinctly squamiform. (Pl. IV, Fig. 15)..*sculpturata* sp. nov.

Strumigenys (C.) *margaritæ* Forel.

Str. margaritæ Forel, Trans. Ent. Soc. London, p. 378 (1893), worker, female, male.
Str. margaritæ Emery, Bull. Soc. Ent. Ital. Vol. 26, pl. 1, f. 6 (1894), worker.

Worker.—Length: 1.8–2 mm. (Pl. II, Fig. 7).

Head gradually but not strongly converging to the apices of the two closed mandibles. Clypeus broader than long; its anterior border either straight and truncate or else very broadly and feebly rounded; only very slightly narrower anteriorly than posteriorly. Mandibles approximately one-sixth the length of the head alone, each flattened dorso-ventrally, with 12–14 small but rather clearly defined teeth. Eyes large, distinct, coarsely faceted, easily visible from the front when the scapes are not held close to the head. Antennal scapes robust, much narrowed basally but scarcely as angulate as with some of the other species of *Strumigenys*. Thorax short, moderately robust; viewed laterally it forms, except for the interruption in the meso-epinotal region, an almost continuous and moderate arch. Meso-epinotal constriction distinct. Epinotum with two rather prominent, acute, slightly divergent spines, which are directed somewhat upward, backward, and outward; the membranous infra-spinal lamellar process lacking beneath each. Petiole and postpetiole remarkable because of the almost complete absence of the abundant spongiform processes which are so common to other species of *Strumigenys*; with this species the posterior border of the petiole and the ventral and posterior surfaces of the postpetiole alone bear a small amount of aerolar membrane that could scarcely be called spongiform.

Body very abundantly and finely reticulate-punctate, subopaque; mandibles and apical portion of gaster differently sculptured, more glabrous. Dorsal portion of first gastric segment finely shagreened, subopaque; lacking coarse longitudinal striae at the base.

Head and thorax covered with short, curved, weakly developed, scale-like hairs; the hairs on the petiole, postpetiole, and gaster longer, more clavate, suberect.

Ferruginous; gaster scarcely darker.

This is another very distinct species. The characters which distinguish it are as follows: (1) the peculiarly shaped clypeus, which is only very slightly narrower anteriorly than posteriorly, and the anterior border of which is decidedly truncate in appearance; (2) its robust antennal scapes, which are not angulate basally; (3) its large, coarsely faceted eyes;

(4) the absence of membranous infra-spinal lamella beneath each epinotal spine; (5) the almost complete absence of spongiform processes on the petiole and postpetiole; and (6) the peculiar shagreening on the dorsal surface of the first gastric segment as well as the absence of coarse striae at the base.

Type locality: Island of St. Vincent (West Indies).

Other localities: New Braunfels, Texas (W. M. Wheeler); Comal County, Texas (C. F. Baker's collection).

S. margaritæ, which was originally described from an island of the West Indian group, may possibly be distributed throughout the Gulf States, although to date, so far as I am aware, it has been taken only in Texas.

I am not in possession of any data concerning its biology.

***Strumigenys* (C.) *membranifera* subsp. *simillima* Emery.**

Str. membranifera subsp. *simillima* Emery, Bull. Soc. Ent. Ital. Vol. 22, p. 69, pl. 8, f. 5 (1890), worker.

Worker.—Length: 1.5 mm. (Pl. III, Fig. 10).

Head proportionately shorter and more robust than with the other species of *Strumigenys*. Anterior portion of the head distinctly subrectangular due to the peculiar conformation of the clypeus and sides of the head. Clypeus decidedly broader than long, the posterior margin rounded, the anterior border so broadly and very gently rounded as to appear sub-truncate at a superficial glance. Frontal area faintly impressed, only slightly discernible. Mandibles small, sub-triangular, approximately one-fifth the length of the head alone, the superior surface of each distinctly visible. Antennal scapes extremely short and robust, each very strongly angulate basally. Eyes extremely small. Each side of prothorax with a sharp, well developed longitudinal carina, which thus causes the prothorax to be laterally marginate throughout. Meso-epinotal constriction lacking. Spines of epinotum apparently lacking, their absence represented by a very wide, thin, vertical lamella on each side. Petiole and postpetiole with abundant spongiform processes, which are attached to their ventral, lateral, and posterior surfaces and are apparently more lamellar in nature than with the other species of *Strumigenys*.

Head very thickly and coarsely reticulate-punctate, subopaque; dorsal surface of thorax very faintly so, almost glabrous. Mandibles, clypeus, frontal area, pleurae of meso- and metathorax, dorsal surfaces of petiole and postpetiole, and all of gaster smooth and shining.

Pilosity of the body comparatively sparse. Head with a pair of short, erect, club-like hairs on the vertex, and 6-7 somewhat similar hairs on the anterior border of the antennal scapes; remainder of body with the exception of the tibiae, tarsi, and the apex and ventral surface of gaster practically devoid of hairs.

Light to dark ferruginous brown.

This is not only one of the commonest forms of *Strumigenys* in Mississippi, but is also one of the smallest and most easily recognized species. The ant can easily be recognized from other species of *Strumigenys* by (1) the peculiarly subrectangularly shaped anterior portion of the head; (2) its distinctive type of mandibles, the superior surfaces of which are always visible; (3) its very short, robust, angularly bent antennal scapes; (4) its strongly and laterally margined prothorax; (5) the lamellar plates on the epinotum instead of spines; (6) the almost complete absence of scale-like hairs on the body; (7) the presence of two short, erect, club-like hairs on the vertex of the head. My Mississippi specimens have been carefully compared with a cotype from Emery's collection. I have been unable to find any characters by which the two might be distinguished.

Type locality: St. Thomas (Virgin Islands).

Other localities: Avera (H. Dietrich and E. Lott), Waynesboro (G. L. Bond), West Point (M. R. Smith and E. E. Byrd), Belzoni (G. W. Haug), Columbus and Greenwood (J. W. Ward), Mississippi.

Undoubtedly this subspecies occurs throughout the Gulf States certainly as far west as the Mississippi River.

This species has usually been found nesting in the soil beneath various objects which lay on the surface, such as pieces of wood, bricks, stone, concrete, etc. In most instances the soil was rather dry. In one case a colony was found nesting in the woodwork of an old deserted house and in another instance a colony was observed in the bulb of a gladiolus. The largest colony noted probably contained not more than from 75 to 100 individuals. Occasionally the ants are found nesting in close proximity to other ants, but whether there is any association between the *Strumigenys* and the other ants no one has been able to say. We have found *Str. membranifera simillima* nesting near colonies of the following species of ants: *Pheidole dentata* Mayr, *Lasius niger* var. *americana* Emery, *Prenolepis* (N.) sp., and *Monomorium minimum* Buckley.

Solitary, wingless queens were collected on a number of occasions. A winged queen was taken at Columbus, Mississippi, on July 18, 1930.

Strumigenys (C.) *ornata* Mayr.

Str. ornata Mayr, Verh. Zool. Bot. Ges. Wien, Vol. 37, p. 571 (1887), worker.

Str. ornata Emery, Bull. Soc. Ent. Ital. Vol. 22, pl. 8, f. 2 (1890); Zool. Jahrb. Syst. Vol. 8, p. 328, pl. 8, f. 20 (1895), worker.

Worker.—Length: 1.6–1.7 mm. (Pl. II, Fig. 5).

Head proportionally slender, gradually converging to a point at the apex of the closed mandibles. Clypeus as long as its greatest width at the base; its sides gradually converging anteriorly and fusing into the rather evenly rounded oval anterior border. Mandibles approximately one-seventh the length of the head alone; teeth lacking on the basal third of each. Antennal scapes moderate, scarcely angulate basally. Thorax with a median pro-mesothoracic carina and a lateral carina on each side of the basal surface of the epinotum, leading to the epinotal spines. Petiole and postpetiole with large spongiform processes, which hide a large part of the petiole and all but the dorsal surface of the postpetiole.

Head, thorax, and petiole reticulate-punctate, subopaque; mandibles, basal portion of clypeus, frontal area, pleurae of thorax, dorsal surface of postpetiole and gaster, smooth and shining.

Clypeus with a pair of exceedingly long, slender, erect hairs and also 8 shorter erect, clavate hairs; remainder of head with a very moderate amount of short, curved, scarcely clavate-like hairs. Hairs on gaster rather sparse, very long and slender, mostly erect, thickest near apex.

Ferruginous brown; gaster varying from deep brown to almost black.

This species can easily be recognized at a glance by the peculiar shape and arrangement of the hairs on the clypeus, which give the head an ornate appearance, hence the name *ornata*. The clypeus with its convergent sides and oval anterior border is also distinctive, although it bears something of a resemblance to the clypeus of *dietrichi*, *clypeata* and its varieties, *pilinasis*, and *laevinasis*. This is one of the smallest species of our *Strumigenys* (1.6–1.7 mm.).

Type locality: Washington, District of Columbia (Theo. Pergande).

Other localities: Louisville, Mississippi (G. W. Haug); Spring Hill, Mobile, Alabama (W. S. Creighton).

This species has been collected so infrequently that its real distribution in North America is inadequately known.

The single worker, which was taken at Louisville, Mississippi, was found on the ground beneath a well rotted pine stump in a moderately dense pine and oak woods. The ground in the vicinity of the stump was covered with a dense layer of leaves. Pergande, who seems to have collected this species more than anyone else, wrote Emery that he had collected the ants amongst

leaves in the vicinity of streams, in cavities in tree trunks, in the earth, and also in the siftings for certain shade and moisture loving beetles. One would infer from the above remarks that *Str. ornata* is strictly a moisture or shade loving type of ant and for that reason is most often associated with the woodland type of ant fauna.

***Strumigenys* (C.) *dietrichi* sp. nov.**

Worker.—Length: 1.7–1.8 mm. (Pl. II, Fig. 6).

Head proportionately long and slender, very strongly converging anteriorly to the apices of the closed mandibles. Mandibles approximately one-sixth the length of the head alone; projecting out prominently in front of the clypeus; each with a prominent acute basal tooth, which is concealed beneath the clypeus when the mandibles are closed. This tooth is followed by a toothless space which occupies scarcely one-half the length of the exposed part of the mandibles, and is in turn followed by the apex of the mandibles that bears 4 or 5 irregular teeth and then a number of subequal denticulae. Clypeus longer than broad, its anterior border forming medianly almost as sharp an apical point or angle as that formed by the posterior border at its insertion between the frontal carinae. Antennal scapes moderate, not angulate basally as with some of the other species; last segment of antennae somewhat longer than the remainder of the funiculi. Thorax with a moderately distinct meso-epinotal constriction. Epinotal spines well developed, acute apically, directed slightly upward, outward, and backward; each with a moderately broad infraspinal lamella beneath. Spongiform appendages of the petiole and postpetiole well developed; present on the ventral surface and posterior border of the petiole and all of the postpetiole except the dorsal surface.

Body reticulate-punctate, subopaque, with the following exceptions: mandibles, pleurae of meso- and metathorax, dorsal surface of postpetiole and gaster, which are smooth and shining. Clypeus and region of frontal area faintly shining due to the finer sculpture. Thorax with a tendency to small longitudinal rugulae, dorsally.

Head covered with moderately abundant and moderately long, curved, scarcely squamiform hairs. Clypeus with 8–10 long, slightly clavate, suberect to erect hairs, which in length and arrangement bear a striking resemblance to those of *Str. ornata*. Petiole, postpetiole, and gaster sparsely covered with long, sub-erect to erect hairs.

Body ferruginous; gaster very dark, almost black; appendages lighter.

This very striking species is easily recognized by the following characters: (1) its long and sharply angulate clypeus, (2) the peculiar arrangement and shape of the hairs which adorn the clypeus, and (3) the unsquamiform or unscale-like hairs which cover the head. *Str. dietrichi* resembles *Str. ornata*, but can be easily distinguished from that species by

the following characters of the workers: (1) the much more acute anterior border of the clypeus, and (2) the distinctly different type of erect hairs on the clypeus.

Type locality: Lucedale, Mississippi, (H. Dietrich).

Described from 7 workers, the cotypes of which are in the collection of the Department of Entomology of the Mississippi A. & M. College and my collection.

Mr. Dietrich, who collected specimens of the ants on different occasions, stated that he found them among the woody frass of logs and stumps while looking for small beetles.

***Strumigenys* (C.) *angulata* sp. nov.**

Worker.—Length: 2–2.5 mm. (Pl. I, Fig. 3).

Head somewhat similar to that of *S. pergandei*, but much more sub-rectangular anteriorly. Eyes variable in size, usually small, and not visible from a frontal aspect of the head. Mandibles approximately three-eighths the length of the head alone; elongate, slender, laterally compressed, converging apically; each mandible with a distinct tooth in front of the anterior border of the clypeus, followed by a very long toothless interval until the apex is reached where there are four prominent teeth followed in turn by five much smaller teeth until the longer, apical tooth is reached. Clypeus almost one and one-half times as broad as long; anterior border transverse, lateral borders converging with the sides of the head in such manner as to give the anterior part of the head a distinctly sub-rectangular effect; both the anterior and lateral borders of the clypeus faintly but distinctly scalloped. Scapes of antennae much more robust than with *Str. pergandei*, each exceedingly angulate basally. Prothorax with a distinct longitudinal carina on each side. Both pro- and mesothorax with a well developed, median carina. Meso-epinotal constriction distinct. Petiole, postpetiole, and gaster not strikingly different from that of *Str. pergandei*.

Body reticulate-punctate, subopaque, with the following exceptions: mandibles, pleurae of most of the thorax, dorsal surface of postpetiole, and all of gaster, smooth and shining.

Pilosity of head similar to that of *Str. pergandei*, but apparently the hairs are not so numerous or perhaps so large. Gaster with similar but more abundant pilosity than that of *Str. pergandei*.

Ferruginous brown; gaster slightly darker.

Str. angulata, as its name signifies, can readily be distinguished from the other species of *Strumigenys* by the very distinct (sub-rectangular) appearance of the anterior part of its head as well as by the very strongly angulate appearance of its antennal scapes. The mandibles bear a close resemblance to those of *Str. pergandei*, but are considerably longer and differently toothed. In addition to the characters just mentioned, the scale-like hairs of the head, although similar to those

of *Str. pergandei*, are noticeably smaller. Although *Str. pergandei* is closely related to *Str. angulata*, one should have little difficulty, however, in separating the two because of the many distinct differences here mentioned. From *Str. membranifera simillima*, which also has a somewhat similarly shaped head and angulate scapes, *Str. angulata* can be distinguished by the mandibles, size, and numerous other characters.

Type locality: Louisville, Mississippi (M. R. Smith).

Described from 14 workers, cotypes of which are in the collection of the Department of Entomology of the Mississippi A. & M. College and my collection.

This very distinctive species was found nesting in a crevice in a rotten log in a rather dense woodland thicket. Since the species has been taken only once in the state, very little is known concerning its biological habits.

***Strumigenys* (C.) *pergandei* Emery.**

Str. pergandei Emery, Zool. Jahrb. Syst. Vol. 8, p. 326, pl. 8, f. 17, 18 (1895), all castes.

Worker.—Length: 2.25–2.5 mm. (Pl. I, Fig. 4).

Head somewhat similar to that of *Str. angulata*, but less rectangular anteriorly. Eyes not visible from a frontal aspect. Mandibles approximately one-fourth the length of the head alone; elongate, slender, laterally compressed, gradually converging apically; each mandible with a prominent robust tooth on its inner margin just in front of the clypeus, this in turn followed by a very long toothless space until the apex of the mandibles is reached where there is a large acute tooth followed by a broadly rounded tooth, and this in turn by a small acute tooth, then a broadly rounded tooth followed by several smaller more or less indistinct teeth. Clypeus with an almost straight, transverse anterior border; lateral borders broadly rounded, gradually converging into the sides of the head without any definite limits. Antennal scapes not only more slender than those of *Str. angulata*, but less angulate basally. Thorax with distinct meso-epinotal constriction; epinotal spines well developed, apically acute and distinct from the thin and narrow infraspinal lamella beneath them. Petiole with spongiform processes on its ventral and posterior surfaces, postpetiole similarly but more abundantly covered except on its dorsal surface.

Body reticulate-punctate, subopaque, with the following exceptions: mandibles, pleurae of the thorax, dorsal surface of postpetiole, and gaster, which are mostly smooth and shining.

Hairs on the head numerous, somewhat similar to those of *Str. angulata*, but larger and more abundant; anterior border of the clypeus with many, usually 14–16 clavate hairs; the anterior margin of the antennal scapes with 8–10 similar hairs. Hairs on the gaster sparse, long, and erect, not enlarged apically.

Color variable, ranging from light to dark ferruginous brown; appendages lighter.

This species can be distinguished by the following characters: (1) its peculiarly shaped mandibles; (2) the distinct type of pilosity of the head; (3) and its large size (2.25–2.5 mm.). *Str. angulata* appears somewhat similar to *Str. pergandei* in the shape of its mandibles, but can readily be distinguished by the different arrangement and shape of the teeth. In addition to this there are other differences, such as the shape of the head, shape of the antennal scapes, etc.

Type locality: Washington, District of Columbia (Theo. Pergande).

Other localities: Maryland and Pennsylvania (Theo. Pergande); Brooklyn, New York (L. F. Barnum, Jr.); Pelee Island, Canada (Mary Talbot); Black Pond, Virginia (W. M. Mann); Oakwood, Illinois (M. R. Smith); Beatty, Pennsylvania (Schmidt); Bronxville, New York (Wheeler); Boston, Massachusetts (Forel).

Str. pergandei appears to be more commonly distributed in the northern and eastern sections of North America, especially in the territory east of the Mississippi River.

The ants have been found nesting in the soil beneath stones and also in the wood of well rotted logs. A log from which a colony was taken by Miss Mary Talbot was so well rotted as to be picked apart easily with one's fingers.

At Urbana, Illinois, a winged female was captured on August 7, while in flight, immediately following a light shower of rain. On August 11, a male was taken in the same locality under similar circumstances.

✓ *Strumigenys* (C.) *clypeata* Roger.

Str. clypeata Roger, Berl. Ent. Zeitschr. Vol. 7, p. 213 (1863), worker.

Str. clypeata Mayr, Verh. Zool.-Bot. Ges. Wien. Vol. 37, p. 571 (1887), worker; Emery, Bull. Soc. Ent. Ital. Vol. 22, pl. 8, f. 3 (1890), worker; Zool. Jahrb. Syst. Vol. 8, p. 328, pl. 8, f. 21, 22 (1895), worker, female, male.

Worker.—Length: 2 mm. (Pl. III, Fig. 9).

Head, including mandibles, rather slender in proportion to its length. Clypeus scarcely longer than broad, its anterior border evenly and broadly rounded, gradually fusing into the lateral borders without any definite limit. Mandibles approximately one-sixth the length of the head alone; each with a basal tooth (which is hidden beneath the edge of the clypeus when the mandibles are closed) followed by a small, toothless space, and this in turn by the exposed series of more or less irregular teeth. Antennal scapes moderate in size, not angulate

basally. Meso-epinotal suture visible, but the region in that vicinity not strongly constricted as with some of the species. Epinotal spines acute, each with a narrow, thin, infraspinal lamella beneath. Ventral and posterior surface of petiole and practically all but the dorsal surface of the postpetiole with the usual spongiform processes.

Head, thorax, and petiole reticulate-punctate, subopaque. Mandibles, pleurae of meso- and metathorax, dorsal surface of postpetiole, and gaster smooth and shining. On the thorax there is usually a faint median carina running anteriorly-posteriorly.

Clypeus covered with numerous short, appressed, squamiform hairs; remainder of head with rather abundant long, curved, clavate hairs.

Light to dark ferruginous; mandibles, clypeus, and appendages slightly lighter, gaster darker.

Str. clypeata can be distinguished by the following characters: (1) its characteristic clypeus, which is scarcely longer than broad, forms a broadly oval curve; (2) the clypeus is covered by an abundance of short, appressed, squamiform hairs; (3) the remainder of the head contains numerous long, curved, clavate hairs; and (4) the mandibles are flattened dorso-ventrally and bear a row of coarse, irregular teeth on their inner borders. This species, although quite distinctive, has characters which cannot be so easily described as some of the other species of *Strumigenys*. The illustration will bring out these characters far better than a verbal description.

Type locality: Louisiana (Roger).

Other localities: Beatty, Pennsylvania (Schmidt); Carolina (Roger); District of Columbia (Mayr); Lucedale, Mississippi (H. Dietrich).

I have no data on the biological habits of this species.

***Strumigenys* (C.) *clypeata* var. *pilinasis* Forel.**

Str. clypeata var. *pilinasis* Forel, Ann. Soc. Ent. Belg. Vol. 45, p. 339 (1901), worker.

Worker.—Length: 2.2 mm. (Pl. III, Fig. 12).

Very similar to *clypeata*, but differing in the following characters: (1) more convex and also more coarsely toothed mandibles; (2) more slender epinotal spines; (3) somewhat wider infraspinal lamellae; (4) presence of very fine longitudinal rugulae on the dorsal surface of the thorax; (5) generally finer sculpturing; and (6) the very distinct type of pilosity of the clypeus, the surface of which is covered with rather long, curved hairs, which are not squamiform and only little, if at all, enlarged.

This species, which very closely resembles *clypeata*, can be at once distinguished from it by the nature of the pilosity of the clypeus. There are other characters of less importance, such as those mentioned above.

Type locality: Potomac River, near Washington, District of Columbia (Forel).

I do not possess any information on the distribution or the biology of this species.

✓ *Strumigenys* (C.) *clypeata laevinasis* var. nov.

Worker.—Length: 1.8 mm. (Pl. III, Fig. 11).

This species could be very easily mistaken for *Strumigenys clypeata* var. *pilinasis*. Although closely allied to that species, this new *subspecies* shows the following distinct differences: (1) the size (1.8 mm.) is smaller; (2) the head is relatively more slender in proportion to its length; (3) the clypeus is not only more narrowly oval anteriorly but is also much more depressed dorsally; (4) the mandibles are less convex; (5) the clypeus and frontal area on account of their sculpture are decidedly more shining; (6) the pilosity of the head is sparser, longer, and apparently more slender; and (7) the color is much darker.

The most distinct characteristics of this new subspecies are the shape and sculpturing of its clypeus, which are entirely different from that of any other species of *Strumigenys*.

Type locality: Louisville, Mississippi (M. R. Smith).

Described from three workers, the cotypes of which are in the collection of the Department of Entomology of the Mississippi A. and M. College and my collection.

The workers of this species were collected from a cavity in a well rotted log lying in a ravine in a rather densely wooded area. In this same habitat were collected *Strumigenys louisianæ* subsp. *laticephala* and *Strumigenys gunalata*.

✓ *Strumigenys* (C.) *missouriensis* sp. nov.

Worker.—Length: 1.5–1.8 mm. (Pl. IV, Fig. 14).

Head rather robust, wider in proportion to its length than with many other species of the genus. Mandibles approximately one-sixth the length of the head alone; not flattened dorso-ventrally; only the apical two-thirds toothed, the latter with well defined more or less regular teeth. Clypeus approximately one-fourth broader than long, very broadly rounded throughout, and weakly scalloped. Antennal scapes moderately robust, angulate basally. Last segment of antennal funiculus slightly longer than the remainder of the funiculus. Thorax with pro-mesonotal suture; meso-epinotal suture represented by a definite but not strong constriction. Prothorax and mesothorax bearing a faint median carina. Epinotum with a carina on each side extending from the meso-epinotal constriction to the base of each spine. Epinotal spines more or less fused with the thin but moderately broad infraspinal lamella beneath each. Spongiform processes of about the same abundance and arrangement as with *Str. pulchella*.

Head, thorax, and petiole reticulate-punctate, subopaque; frontal area of head, pleurae of meso- and metathorax, dorsal surface of post-petiole, and gaster, smooth and shining.

Pilosity of body similar to that of *Str. pulchella* with reference to shape, arrangement, and abundance.

Ferruginous brown; gaster darker, appendages lighter.

In many respects the worker of *Str. missouriensis* bears a striking resemblance to the worker of *Str. pulchella*. This is evidenced by their strong similarity in sculpturing, pilosity, spongiform processes of petiole and postpetiole, and so forth. Upon carefully comparing typical workers of the two species the following differences can be noted in the *Str. missouriensis* worker: (1) the head is proportionally broader and more robust; (2) the mandibles are more robust, not so laterally compressed, and therefore more convex; (3) the antennal scapes are more robust and also more angulate basally; (4) the sculpturing of the head is coarser—that is, more rugulose or tuberculate; (5) the pilosity of the clypeus is much less abundant.

Type locality: Columbia, Missouri (Mary Talbot).

Described from six workers, the cotypes of which are in my collection.

Concerning the nesting habit of this species, Miss Talbot wrote me that the ants were found in an *Aphaenogaster fulva* nest under a stone and were rather deep in the nest, which was located in clay soil on a little bluff over a stream. The nest contained not only workers, but also winged females at the date of collection (August 20, 1929).

***Strumigenys* (C.) *pulchella* Emery.**

Str. pulchella Emery, Zool. Jahrb. Syst. Vol. 8, p. 327, pl. 8, f. 19 (1895), worker.

Worker.—Length: 1.5–1.66 mm. (Pl. IV, Fig. 13).

Anterior and lateral borders of clypeus forming a rather broad and more or less regular arc, which somewhat approaches a semicircle; both margins usually more or less scalloped. Mandibles approximately one-sixth the length of the head alone; laterally compressed, apically converging; the masticatory borders occupying about one-half of the visible sections of the mandibles; each with a small but distinct tooth on its inner margin, which is probably hidden beneath the clypeus when the mandibles are closed but is visible when the mandibles are open; following the tooth there is a toothless space until the masticatory border is reached, where there are four rather prominent basal teeth followed by a number of smaller, less distinct teeth. Antennal scapes moderate in size, slightly angulate basally. Thorax not robust; viewed laterally it is slightly arched or carinulate medianly, the carina usually distinct throughout the pro- and mesonotum; meso-epinotal constriction

present; faint lateral carinae extending from the meso-epinotal constriction to the epinotal spines, which are moderate in size and clearly distinct from the infraspinal lamella beneath each. Petiole and postpetiole with well developed spongiform processes, which occur on the ventral and posterior border of the petiole and all of the postpetiole except the dorsal surface. Gaster of the usual shape.

Body reticulate-punctate, subopaque with the following exceptions: mandibles, frontal area, the pleurae of the meso- and metathorax, the dorsal surface of the postpetiole, and the gaster, which are smooth and shining.

Pilosity of the head moderately abundant, short, erect, not strongly enlarged apically; anterior border of clypeus usually with 10-12 forwardly directed hairs; hairs on gaster sparse, long, and erect, not enlarged toward their apex.

Color variable, ranging from light ferruginous brown to deep brown; gaster in some specimens approaching black, in others much lighter colored.

Str. pulchella is one of our smallest and most slender bodied species of *Strumigenys*. The ants can be distinguished from related forms by the following characteristics: (1) the mandibles, which are approximately one-sixth the length of the head alone; are peculiarly shaped; each bears on its inner margin near the base a small tooth, which is partly concealed beneath the edge of the clypeus; this tooth is followed by a small toothless space until the masticatory border is reached where there are four rather prominent teeth followed by a number of smaller, more or less indefinite teeth; (2) the clypeus is very broadly and evenly rounded throughout, forming almost a semicircle, its borders usually distinctly scalloped; (3) the scapes are moderate in size and only faintly elbowed basally; (4) the borders of the clypeus have from 10-12 club-like hairs; and (5) the pro- and mesonotum bear a median longitudinal carina.

Type localities: Washington, District of Columbia, and Beatty, Pennsylvania (Theo. Pergande).

Other localities: Urbana, Illinois (M. R. Smith); Columbus, Aberdeen, West Point, and Lucedale, Mississippi (M. R. Smith, G. W. Haug, J. W. Ward, E. E. Byrd, and H. Dietrich); Frankfort and Philadelphia, Pennsylvania (no collector's name); Mobile and Decatur, Alabama, and Taylorsville, Mississippi (W. S. Creighton); Forest Park, Long Island, New York (L. F. Barnum, Jr.).

Judging from the distributional records, *Str. pulchella* is widely distributed in the states east of the Mississippi River

and very probably farther north and west than this. In Mississippi it is one of the commonest species of the genus.

Colonies are very frequently found in the moist frass beneath well rotted pine stumps and logs. Dr. W. S. Creighton in remarking about the nesting habits of the ants said, "I have always found this ant in very much decayed (red rotten) logs in damp situations." This, however, is not their only type of habitat for in Mississippi we have frequently found colonies in the soil beneath objects, such as bricks, stones, pieces of wood etc., and in many cases the situations could not have been spoken of as especially moist or damp.

We have in a number of instances found colonies of *Str. pulchella* in close proximity to the nests of other ants. Whether there was any relation between the two no one has been able to say. Some of the ants found nesting in the vicinity of this species were: *Tapinoma sessile* Say, *Monomorium minimum* Buckley, *Iridomyrmex humilis* Mayr, *Myrmecina graminicola* subsp. *americana* Emery, *Pheidole dentata* Mayr, and others. The colonies which we have found were never large, usually ranging from a half dozen or so individuals to some fifty or sixty. In some instances specimens may have been overlooked due to their small size, obscure color, habit of death-feigning, etc.

✓ *Strumigenys* (C.) *rostrata* Emery.

Str. rostrata Emery, Zool. Jahrb. Syst. Vol. 8, p. 329, pl. 8, f. 23, 24 (1895), worker, female, male.

Worker.—Length: 2–2.5 mm. (Pl. II, Fig. 8).

Head, excluding mandibles, viewed from a frontal aspect, appears truncate because of the straight or very feebly emarginate anterior border of the clypeus. Clypeus broader than long, with moderately converging lateral borders. Mandibles approximately one-fifth the length of the head alone; elongate, but yet somewhat narrowly triangular; flattened dorso-ventrally; each provided throughout the entire length of the inner border with a number of large, coarse teeth. Antennal scapes robust; each slightly angulate basally. Thorax rather short and robust, with a pronounced shoulder-like angle on each side at the point of junction between the pro- and mesothorax. Epinotal spines well developed, acute, about as long as broad at the base and distinct from the infraspinal lamellae. Petiole and postpetiole with the usual conspicuous amount of spongiform processes.

Body reticulate-punctate, subopaque, with the following exceptions: mandibles, frontal area, pleurae of the meso- and metathorax, dorsal surface of postpetiole, and all of gaster except the basally striated area.

Pilosity of the head much sparser and smaller than with *Str. pergandei*. Thorax with an extremely long hair at each humeral angle

and at the angles between the pro- and mesothorax. Pilosity of the gaster sparse, erect, long, not enlarged apically, confined mostly to the venter.

Ferruginous brown; first segment of the gaster darker, appendages lighter.

This species can be recognized from most species of *Strumigenys* by its very characteristic mandibles, which are unusually coarsely toothed. Other characters which seem to set it apart from its congeners are: (1) the rather broad truncate clypeus; (2) the long single hair at the humeral angles of the thorax and at the angles made by the pro- and mesothoracic segments; and (3) the robust, somewhat angulate antennal scapes.

Type locality: Washington, District of Columbia (Theo. Pergande).

Other localities: Virginia, near Plummers Island, Maryland (W. M. Mann); Angelsea, New Jersey (determined by Pergande); Claremont, California (C. F. Baker); Baldwin County, Alabama (W. S. Creighton).

The distributional records show that *Strumigenys rostrata* is distributed as far north as New Jersey and westward to California.

Unfortunately I possess little information on the biology of this species. Dr. W. S. Creighton, who took a single worker of this species in Baldwin County, Alabama, informed me that the specimen was obtained on the bark of a decaying stump.

‡ *Strumigenys* (C.) *creightoni* sp. nov.

Worker.—Length: 1.9–2.1 mm. (Pl. IV, Fig. 16).

Head resembling that of *Str. pulchella*, but proportionally narrower anteriorly. Anterior border of clypeus straight or very faintly rounded, thus giving the clypeus a much more decidedly truncate appearance than with *Str. pulchella*. Mandibles not only more robust but also more flattened dorso-ventrally and without the strongly reflexed apical masticatory border of *Str. pulchella*. The longitudinal carina of the pro- and mesothorax very poorly developed, those of the epinotum very weak or missing. Sculpturing similar to that of *Str. pulchella* but much coarser, thus giving the body a more granulated appearance. Pilosity of head rather abundant, short, similar to that of *Str. pergandei*, but apparently not quite so large. Border of clypeus with 14–16 anteriorly directed scale-like hairs.

Ferruginous; mandibles, antennae, and legs lighter.

This species, although bearing considerable resemblance to *Str. pulchella*, shows its distinctiveness in the following characters: (1) its more flattened and differently shaped mandibles; (2) its proportionally narrower head anteriorly; (3) its more

truncated clypeus; (4) the more abundant and spatulate shaped hairs of the head; (5) the absence of, or weak development of, the lateral carinae of the thorax; and (6) its larger size (2.1 mm.).

Type locality: Spring Hill, Mobile, Alabama (W. S. Creighton).

Described from four workers, the cotypes of which are in my collection.

✓ *Strumigenys* (C.) *sculpturata* sp. nov.

Worker.—Length: 1.75–1.8 mm. (Pl. IV, Fig. 15).

Very closely allied to *Str. pulchella*, but distinct from this species in the following characters: namely, (1) its more robust head, the width of which is greater in proportion to its length; (2) the more rugulose or tuberculate sculpturing of its head; (3) its more robust and coarser type of mandibles; and (4) the decidedly truncate shape of the anterior border of its clypeus. From *Str. missouriensis*, to which it also bears a striking resemblance, it can be at once separated by the shape of its clypeus, as well as by the slightly less robust mandibles.

Type locality: Aberdeen, Mississippi (M. R. Smith).

Described from seven workers, the cotypes of which are in the collection of the Department of Entomology of the Mississippi A. & M. College and my collection.

To this species I have also referred specimens from Ripley, Mississippi (S. W. Simmons) and Black Pond, Fairfax County, Virginia (W. M. Mann).

This species nests beneath the bark of rotten logs and stumps as well as in the soil beneath objects lying on the surface.

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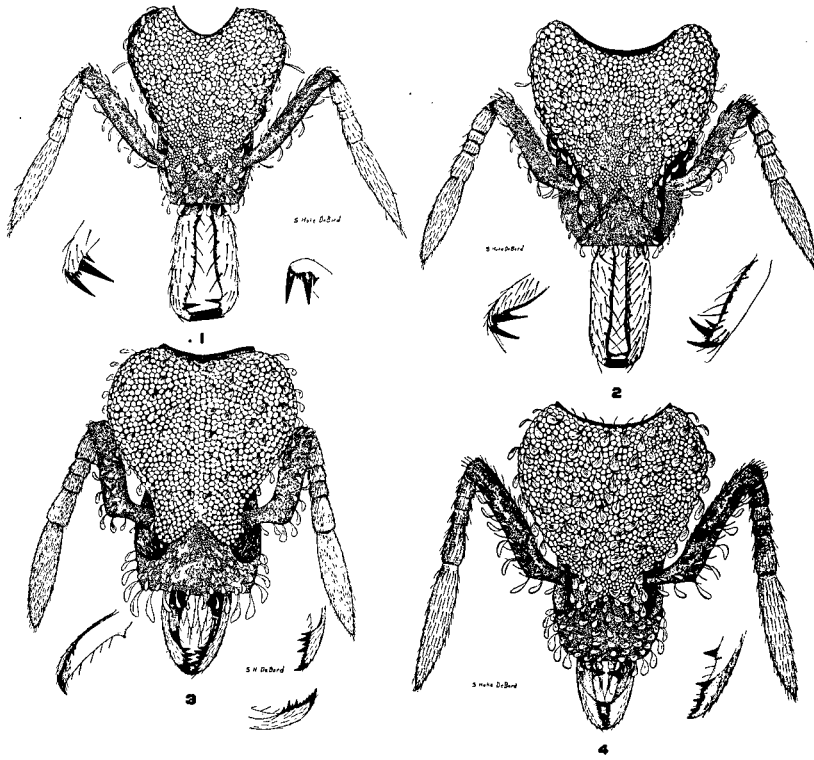


Fig. 1. Frontal view of head, and mandibles of *Str. louisianæ* Roger.
Fig. 2. Frontal view of head, and mandibles of *Str. louisianæ laticephala* subsp. nov.
Fig. 3. Frontal view of head, and mandibles of *Str. angulata* sp. nov.
Fig. 4. Frontal view of head, and mandible of *Str. pergandei* Emery.

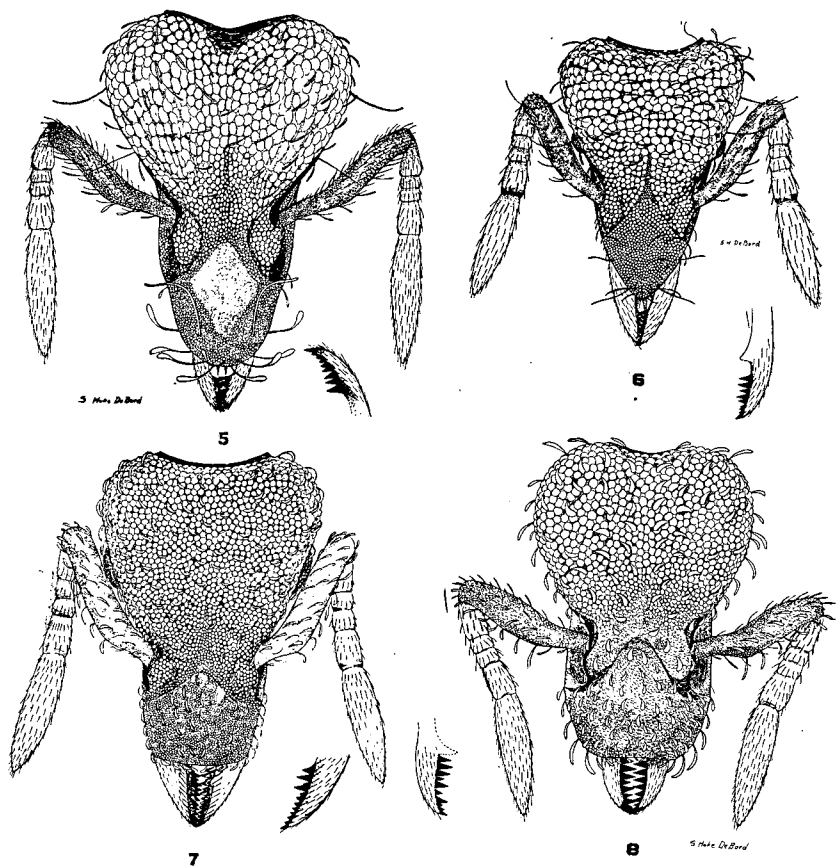
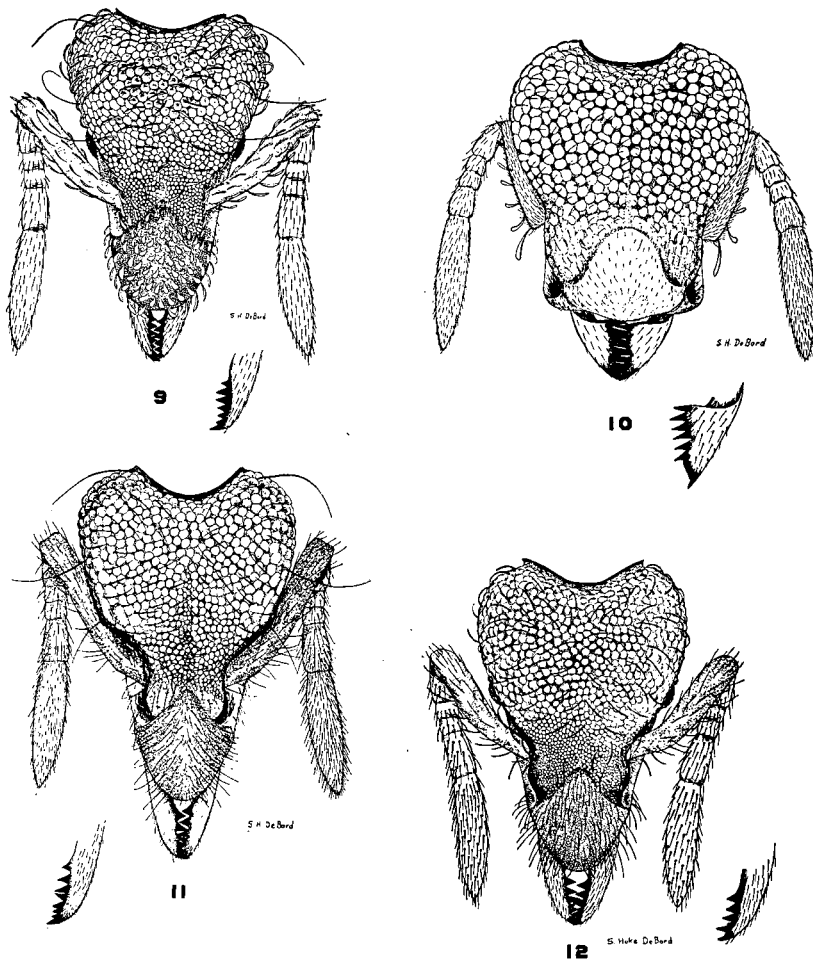


Fig. 5. Frontal view of head, and mandible of *Str. ornata* Mayr.
Fig. 6. Frontal view of head, and mandible of *Str. dietrichi* sp. nov.
Fig. 7. Frontal view of head, and mandible of *Str. margaritæ* Forel.
Fig. 8. Frontal view of head, and mandible of *Str. rostrata* Emery.



- Fig. 9. Frontal view of head, and mandible of *Str. clypeata* Roger.
 Fig. 10. Frontal view of head, and mandible of *Str. membranifera* subsp. *simillima* Emery.
 Fig. 11. Frontal view of head, and mandible of *Str. clypeata* var. *laevinasis* var. nov.
 Fig. 12. Frontal view of head, and mandible of *Str. clypeata* var. *pilinasis* Forel.

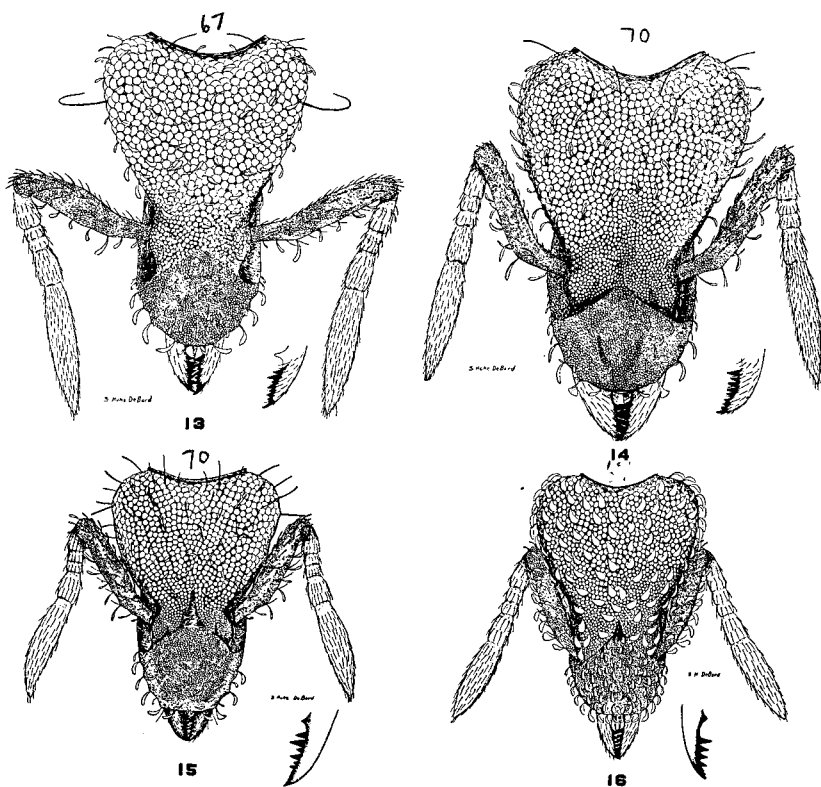


Fig. 13. Frontal view of head, and mandible of *Str. pulchella* Emery.
Fig. 14. Frontal view of head, and mandible of *Str. missouriensis* sp. nov.
Fig. 15. Frontal view of head, and mandible of *Str. sculpturata* sp. nov.
Fig. 16. Frontal view of head, and mandible of *Str. creightoni* sp. nov.