

**PARAMYRMICA, A NEW NORTH AMERICAN GENUS  
OF ANTS ALLIED TO MYRMICA LATREILLE.  
(HYMENOPTERA: FORMICIDAE)<sup>1</sup>**

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When one considers the tremendous progress that has been made in the study of North American ants during the first half of this century, it is a rare privilege to be able to erect, describe, and name a new genus which has as its genotype an equally new species. Furthermore, one is not likely to find often a small ecologic niche in which populations representing three new and very distinctive species reside beneath adjoining stones.<sup>2</sup>

**Paramyrmica gen. nov.**

Medium-sized species allied to *Myrmica* and *Manica*; workers monomorphic, with partly female-like thoracic structure.

*Worker*.—Head a little longer than broad, with faintly convex sides and rounded occipital corners; frontal carinae short, subparallel; median lobe of clypeus moderately convex, depressed mesally, its anterior border straight; frontal triangle well developed. Eyes convex, prominent, placed slightly anterior to middle of sides of head. Antennae 12-segmented; scapes robust, broadly curved near base; club apparently 4-segmented but not sharply differentiated from basal segments. Mandibles large, broad, evenly convex; with a pronounced, broad apical tooth, a shorter broad subapical tooth, and four subequal, distinct basal teeth. Maxillary palpi 6-segmented; labial palpi 4-segmented. Promesonotal suture distinctly impressed; mesoepinotal impression deep and very broad. Epinotal spines well developed. Tibial spurs of middle and hind legs moderately large, pectinate in majority of specimens, apectinate in others. Petiole weakly pedunculate, venter with a small anteriorly directed spine. Postpetiole unarmed ventrally.

*Female*.—Not much larger than the worker and very similar to it except for the usual female characteristics.

*Genotype*.—*Paramyrmica colax* sp. nov.

*Holotype*, worker (Cole Coll. No. TX-59)

Head length (from middle of clypeal border to middle of occipital margin), 1.16 mm.; head width (just behind eyes), 1.04 mm.; scape length, 1.11 mm.; pronotal width, 0.75 mm.; thoracic length (excluding pronotal collar) 1.77 mm., length of petiolar node, 0.28 mm.; width of petiolar node, 0.29 mm.; length of postpetiolar node, 0.46 mm.; greatest width of postpetiolar node, 0.48 mm.; overall body length, 5.51 mm.

<sup>1</sup>The field collection and study were made with the aid of a research grant from the National Science Foundation.

<sup>2</sup>Descriptions of the other two ants, both of which are members of the genus *Leptothorax* are in press.

Head rather broad with respect to length, broadest just behind eyes, narrower in front than behind, the sides faintly convex; occipital corners broadly rounded, middle of occipital border broadly excized; sides broadly convex. Frontal lobes subtriangular, thin, flattened posteriorly, the margin anterior to the angle slightly produced upward. Median lobe of clypeus about as broad as long, its anterior margin straight, its median portion impressed; in profile, broadly convex mesally. Lateral portions of clypeus narrow. Frontal area distinct, triangular, large, width at base about twice as great as distance from base to apex. Frontal carinae short, subparallel, widely spaced. Eyes large, convex, prominent, broadly ovoid, placed slightly anterior to middle of sides of head. Antennae 12-segmented; scapes broad, rather short, robust, distinctly but broadly curved near the base, the bend without a lobe or keel, in length surpassing occipital border by approximately their greatest breadth, narrower and thinner from basal bend to their insertion; funiculus comparatively short, about  $1/3$  longer than scape,

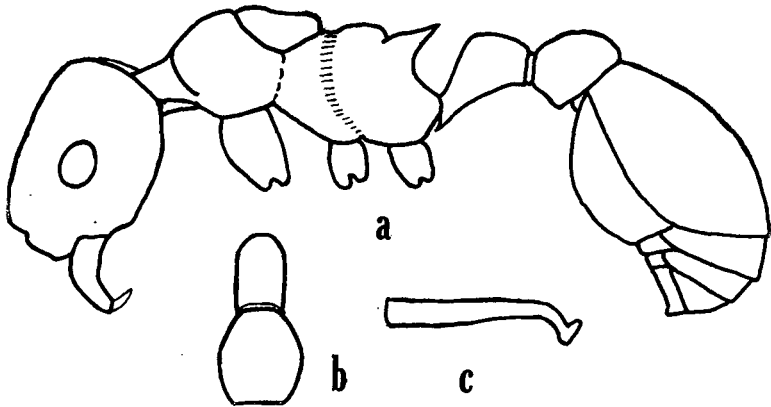


Fig. 1. *Paramyrmyca colax* n. sp., worker; a, lateral view showing body outline; b, dorsal aspect of petiolar and postpetiolar nodes; c, antennal scape.

club apparently 4-segmented but differentiation of club from basal segments indefinite, basal segment of funiculus as long as following two segments combined, segments between basal one and the club approximately the same size, broader than long. Maxillary palp 6-segmented; 2nd, 3rd, and 4th segments subequal in length, 2nd and 3rd subequal in width, 4th a little narrower than 3rd, terminal segment longer and narrower than any preceding segment, basal segment with a pronounced subacute lobe on ventral border. Labial palp 4-segmented, basal segment long, somewhat flattened, broadly curved (notably so in the distal third); 2nd segment about  $2/3$  as long as 1st; 3rd a little shorter than 2nd, but approximately as wide distally, and very narrow at base; terminal segment subequal to 3rd in length but much broader basally and as wide mesally as the greatest width of 3rd; 3rd and 4th segments forming a 2-segmented club. Mandibles large, broad, subtriangular, evenly convex; bearing a large, broad apical tooth, a shorter, broad, subacute subapical tooth, five subequal, well-de-

veloped, basal teeth; a small acute denticle between subapical and first basal teeth, and a similar denticle between first two basal teeth; 2nd and 3rd basal teeth subequal, 4th basal tooth slightly smaller, and 1st basal tooth somewhat larger than 2nd and 3rd.

In profile, pronotum rather broadly convex but with a definite declivity to the pronotal collar, promesonotal suture distinct; mesonotum forming a scutum-like sclerite (Fig. 1a), nearly flat but with a very slight and broad concavity, its posterior declivity dropping gently (and at its immediate posterior portion rather abruptly) to the very deep and wide mesoepinotal impression; basal face of epinotum short and broadly convex, meeting the rather abrupt declivity in a much-rounded angle. Viewed from above, pronotum with broadly rounded humeri, the thorax being widest through this region; promesonotal suture distinct; mesoepinotal suture prominent. Epinotal spines well developed, very broad at base, tapering strongly and evenly to the acute apex; when viewed from above, they extend backward and slightly but noticeably outward; a little longer than  $1/2$  the distance between their bases. Petiole, viewed in profile, with a short, thick anterior peduncle; node longer than high; anterior declivity slopes rather abruptly and evenly to the peduncle; dorsum broadly and evenly convex, sloping gently and evenly to its posterior peduncle; with a small, elongate, slender, rather blunt, anteroventral spine, strongly directed forward. Postpetiole, in profile, broadly and evenly convex, higher behind than in front, its length approximately equal to its greatest height; unarmed ventrally. Petiolar node viewed from above, longitudinally suberect, angular, sides subparallel, anterior corners broadly rounded, anterior border straight. Postpetiole, viewed from above, subovoid; a little longer than wide, anterior corners distinctly and broadly rounded, narrower in front than behind. Gaster elliptical, not truncate basally.

Head subopaque, with wavy, longitudinal rugae which are finest across frons and vertex and coarser on genae and occipital corners where they tend to lose their longitudinal trend and become distinctly reticulo-rugose; converging from frons to vertex. The fine longitudinal rugae of the median region continue over the frontal triangle and median clypeal lobe. Interrugal and interreticular spaces densely and finely granulose. Venter of head rugo-reticulose and densely granulose. Frontal triangle and median lobe of clypeus without interrugal sculpture except for faint, sparse granulation. Lateral lobes of clypeus with a few, rather strong, widely separated, longitudinal rugae. Mandibles longitudinally rugulose, the interspaces smooth and rather shining. Antennal scapes densely and finely granulose, the surface (except proximal to the bend) slightly shining; from bend to attachment opaque and densely and more coarsely granulose. Antennal funiculi very finely granulose.

In profile, pronotum rugo-reticulose and granulose; mesosternites granulose and finely and sparsely rugulose, the rugae being well separated; mesoepinotal suture rather coarsely, longitudinally rugose, the rugae far apart, the interrugal sculpture very finely and sparsely granulose; epinotal sternites irregularly and longitudinally rugose with the interspaces finely granulose. Viewed from above, pronotal collar finely and rather densely longitudinally rugulose and finely and sparsely granulose; pronotum rather coarsely reticulo-rugose and finely, unevenly, and sparsely granulose; mesally situated and near the promesonotal suture is a large, very faintly granulose area, subhexagonal in shape, formed by peripheral rugae; mesonotum coarsely reticulo-rugose and faintly granulose. Mesoepinotal impression shining and nearly smooth except for a small, median, produced portion which is longitudinally rugulose; base of epinotum reticulo-rugose and very faintly and sparsely granulose; epinotal declivity finely granulose and shining. Epinotal spines finely and very sparsely granulose, rather translucent. Petiole, viewed from above, densely and finely granulose, with a

few, irregular, longitudinal rugulae; viewed in profile, irregularly, longitudinally rugulose, the interrugal spaces granulose. Postpetiole, viewed from above, striato-granulose, subopaque, the surface slightly less shining than that of petiole, a few striae anteriorly and a few reticulations in the posterior portion. Legs rather shining, coriaceous.

Dorsum of gaster very densely, finely, and longitudinally striate and sparsely but distinctly punctate. The striae, which are more pronounced at the base, extend for about  $2/3$  the length of the first gastric segment where they gradually fade out; the interspaces very finely granulose. The gaster has a distinctive oily appearance.

Hairs very pale yellow to silvery in color, sparse, most numerous on gaster, legs, and antennae, at no place fully erect; suberect on terminal portion of dorsum of each gastric segment, except the first, and on venter of posterior portion of first gastric segment and venter of all following segments, and on sides of anterior peduncle of petiole; elsewhere subappressed to appressed. Hairs on head very sparse, nearly absent from occipital margins and corners; a few, rather widely-spaced, subappressed, blunt-tipped hairs on frontal region which extend up to the vertex, these hairs bordering laterally a narrow hair-free area which extends from apex of frontal triangle to vertex of head; anterior border of median clypeal lobe with a few suberect hairs; central portion of clypeal lobe free from hairs, this area being bordered laterally by a few, rather widely-spaced, subappressed, blunt hairs; a few scattered and somewhat longer, suberect hairs extend from lateral margin of each frontal lobe. Mandibles with scattered, rather widely-spaced hairs, more elongate terminally. Antennal scapes and funiculi with rather numerous and somewhat longer subappressed to suberect hairs covering all surfaces; club of funiculus with long, slender, very dense, golden hairs blending into long, dense pubescence on terminal segment. Hairs on legs most numerous on tibiae and tarsi where they are for the most part subappressed. Hairs on thorax very sparse, restricted to dorsum of pronotum, mesonotum, and mesoepinotal impression, where they are appressed to subappressed, short, and clavate; the median pronotal facet without hairs; absent from epinotum and epinotal spines; a few, widely-spaced, clavate, subappressed hairs on posteriodorsal portion of petiolar node and a scattering of appressed clavate hairs on postpetiolar node. Hairs on dorsum of first gastric segment rather numerous, widely and quite evenly spaced, short, and completely to nearly completely appressed.

Head, thorax, legs, and lateral surfaces of petiole and postpetiole a deep reddish brown, appearing as black without magnification; dorsum of petiole and postpetiole darker; dorsum of gaster a very glossy black, venter a deep reddish brown; terminal portion of each funicular segment and base of scapes infuscated; mandibles a light reddish brown, antennae slightly darker.

*Paratype*, nest queen. (Cole Coll. No. TX-59).

Head length, 1.24 mm.; head width, 1.09 mm.; scape length, 1.07 mm.; thoracic length (exclusive of pronotal collar), 1.87 mm., greatest thoracic width (across tegulae), 0.99 mm.; overall body length, 5.79 mm.

Very similar to the holotype with the following chief differences: Ocelli prominent; median anteriodorsal portion of scutum rather smooth and highly shining, being very densely but faintly coriaceous, bearing a few scattered striae with a longitudinal trend, a short, narrow, anterior portion and two dorsolateral, longitudinal bands which are completely devoid of surface sculpture; scutum bears a number of scattered, rather large punctures; entire thoracic dorsum much smoother, the only reticulate areas of the thorax being on the scutellum and the basal face of the epinotum; two lateral, longitudinal bands and an anteriomedian splotch of infuscation on the scutum; mesosternites and legs infuscated.

*Type locality.*—The holotype, a series of 238 paratyptic workers, and a single nest queen were collected by the writer, on June 11, 1956, from a colony nesting in soil beneath a stone in a grassy, sparsely wooded, moist, level area, at an elevation of approximately 5,400 feet, in Limpia Canyon, Davis Mts., Jeff Davis County, Texas. Also in the nest were workers of *Myrmica striolagaster* Cole.

*Variation in the paratyptic workers.*—Head length, head width, scape length, and thoracic length vary, respectively, from 1.08, 0.95, 0.98, and 1.43 mm. in the smallest workers to 1.22, 1.07, 1.11, and 1.65 mm. in the largest workers. Variation in structure, sculpture, pilosity, and color are slight. The greatest difference appears to be in the pectination of the spurs of the middle and hind tibiae. Although these spurs are pectinate in most specimens, the degree of pectination is highly variable and in some specimens there is no trace of pectination. The smallest workers have shorter and more broadly triangular epinotal spines than do the largest workers.

*Disposition of types.*—The holotype, a large share of paratyptic workers, and the paratyptic queen are in the writer's collection. Paratypes will be deposited in the U. S. National Museum, the Museum of Comparative Zoology (Harvard), the American Museum of Natural History, the Kennedy Collection of Ohio State University, and in the private collections of W. S. Creighton, R. E. Gregg, and Mary Talbot.

*Affinities.*—The new genus appears to be most closely related to *Myrmica* Latreille and perhaps in certain respects to *Manica* Jurine. Like *Myrmica*, but unlike *Manica*, the epinotum is spinose. The type of surface sculpture and mandibular dentition are similar to those of *Myrmica*. Like *Manica*, the promesonotal suture is present, even though more strongly impressed, and the mesoepinotal impression is deep and very wide. The pilosity is unlike that of members of either genus, however. Although, in most workers of the new genus, the tibial spurs of the middle and hind legs are pectinate, the pectination varies, and in some specimens it is apparently absent. The spurs, in general, and especially those of the hind tibiae, are more weakly developed than those of either *Myrmica* or *Manica*.

*Paramyrmica colax* bears a definite similarity to *Myrmica striolagaster*, its host species. In punctulation and striation there are especially close resemblances, although the striations are notably more pronounced in *colax*. The new species lacks the prominent basal keel on the scape which in part characterizes *striolagaster*. The reticulo-rugose sculpture of *striolagaster* is much stronger than that of *colax* and color is different.

*Discussion.*—*P. colax* is evidently a nest parasite (or inquiline) of *Myrmica striolagaster*. The number of nesting workers of the former species as compared with the latter one was in a proportion of about four to one, which would seem to indicate that the mixed colony was probably one of rather long duration. When the nest was exposed, by the removal of its covering stone, workers of *colax* scurried out, whereas those of *striolagaster* were found only during excavation of the nest.

The potential importance of the new ant was surmised in the field, and every effort was made to collect all of the inhabitants of the nest which extended to a depth of only about one foot. Larvae will be sent to Dr. G. C. Wheeler for description. A pure colony of *M. striolagaster* was found beneath a stone not more than ten feet from the mixed nest.

We may speculate that the fecund female of *colax* entered the host colony of *striolagaster* and was adopted by the host workers, after which the host queen was eliminated and the parasite assumed the function of queen. A diligent but fruitless search was made for other mixed nests and for pure colonies of *colax*.

The general similarity in habitus which *colax* bears to *striolagaster* is the type of character convergence that one might expect with reference to such a behavioral relationship. The female-like characteristics which *colax* bears are not out of line with what occurs in some other genera of ants.

The trivial name for the new species was selected because of the parasitic behavior of the ant.