

Article XII.—SOME ADDITIONS TO THE NORTH AMERICAN
ANT-FAUNA.¹

BY WILLIAM MORTON WHEELER, PH.D.

Family FORMICIDAE.

Subfamily PONERINÆ.

1. *Stigmatomma pallipes arizonense* subsp. nov.

Worker. Length nearly 4 mm.

Differing from the worker of the typical form in its somewhat smaller size, in having the head narrower in front so that the sides are nearly parallel, in the feebleness and coloration. The punctuation of the head and thorax is finer and denser so that these parts are distinctly more opaque than in the typical form, the pubescence is shorter and seems to be lacking on the upper surface of the head, and the whole body is dull ferruginous, with scarcely paler legs, whereas in the typical *pallipes* the head, thorax and petiole are usually blackish in mature specimens and the legs, mandibles and antennæ are testaceous.

Described from a single worker taken by Mr. W. M. Mann in Ramsay Cañon, Huachuca Mountains, Arizona, at an altitude of 5800 ft.

2. *Stigmatomma pallipes oregonense* subsp. nov.

Worker. Slightly larger than the typical *pallipes*; head somewhat shorter; antennal scapes longer, so that their reflected tips reach the lateral margin of the head two-thirds the distance from the anterior to the posterior corners; eyes distinctly larger; teeth on the anterior border of the clypeus smaller and more numerous (9 to 10). Petiole from above as broad as long, with convex sides. In the typical form it is distinctly longer than broad, with rather straight, subparallel sides. Sculpture, pilosity and color as in the type.

Female (dealtated). Closely resembling the worker; eyes much larger than in the typical *pallipes*.

Described from eight workers taken at Marion, Oregon, by Rev. P. J. Schmitt O. S. B., and four females and five workers taken by Mr. Trevor Kincaid at Olympia, Washington.

¹ Contributions from the Entomological Laboratory of the Bussey Institution, Harvard University, No. 88.

3. *Proceratium silaceum rugulosum* subsp. nov.

Worker. Body more heavily rugulose and therefore more opaque than in the typical form and darker and more brownish in color.

Female. (deãlated.) Closely resembling the worker and differing from the female of the typical form in the same particulars.

Described from a single female and four workers taken by Mr. Wm. Blatchley at Wyandotte, Indiana. The specimens have been compared with four cotypes of *silaceum* collected by Rev. P. J. Schmitt at Beatty, Pennsylvania.

4. *Ectatomma* (*Parectatomma*) *hartmani* sp. nov.

Worker. Length nearly 3 mm.

Head distinctly longer than broad, subrectangular, with rounded posterior corners, convex above, a little broader behind than in front, with rather straight sides and feebly excavated posterior margin. Eyes a little behind the middle of the sides of the head. Clypeus short, rather convex, with its anterior border straight and entire in the middle. Mandibles rather long, distinctly triangular, the apical margin longer than the basal, not denticulate, meeting the basal margin at an obtuse angle which is neither membranous nor translucent. Antennæ moderately robust; scapes reaching nearly to the posterior corners of the head; first funicular joint as long as the two succeeding joints together; second joint as long as broad; remaining joints, except the last, broader than long. Thorax above feebly convex, slightly transversely impressed between the pro- and mesonotum, but without a suture; base and declivity of epinotum subequal, the latter concave and sloping, on each side above with a small protuberance but neither dentate nor tuberculate. Petiole shorter than high, convex and rounded dorsally, a little broader than long, its ventral surface with a blunt, compressed projection directed downward and forward. First gastric segment narrower and a little longer than the second, with a small, truncated tubercle on its anteroventral surface. Legs rather long; hind coxæ spined.

Somewhat shining, especially the mandibles, which are covered with shallow foveolæ and striated at the base. Clypeus, frontal area, head, thorax, including the epinotal declivity, and the gaster rather finely and regularly, longitudinally rugose. Antennal scapes and legs with minute, scattered, piligerous punctures.

Hairs white, erect, coarse, long and abundant, covering the body, legs and antennal scapes; funiculi with shorter, suberect hairs.

Body, mandibles and antennæ ferruginous red; legs somewhat paler and more yellowish.

Described from a single specimen taken by Mr. Carl Hartman at Huntsville, Texas. This is the first species of *Ectatomma* to be taken within the boundaries of the United States. Though similar in color and structure to the three known species of the subgenus *Parectatomma* (*rastratum* Mayr

of Brazil and Costa Rica, *triangulare* Mayr of Uruguay and Argentina, and *trigona* Emery of Brazil) it is much smaller. In the structure of the mandibles it is intermediate between these species and those of the subgenus *Guamptogenys* Mayr.

5. *Odontomachus hæmatoda coninodis* subsp. nov.

Worker. Length 6–8 mm.

Related to the subsp. *clarus* Roger, but the head is narrower and the body averaging smaller. The petiolar node is conical and convex behind and not acuminate at the tip or produced into a spine as in the typical *hæmatoda* and the subsp. *insularis* Guérin. The head, thorax, petiole and appendages are even paler and more yellowish than in *clarus* and the gaster is brown or dark red, with pale tip and segmental margins. The sculpture of the head and thorax is finer than in *clarus* and the surface a little more shining.

Female. Length 8–9 mm.

Resembling the worker and having the petiole of the same shape, but the sculpture and color of the female *clarus*, the gaster being blackish and the remainder of the body more reddish than in the worker. Wings grayish hyaline, with yellowish veins and stigma.

Described from one dealated female and seventeen workers taken Nov. 12–14 by myself in Hunter and Miller Cañons, Huachuca Mts., Arizona, at altitudes varying from 5000–7000 ft., and a single winged female taken during August by Mr. W. M. Mann in Ramsay Cañon, in the same mountain range. This subspecies, which forms small colonies and nests under stones, may be regarded as a depauperate desert mountain form derived from the subspecies *clarus*.

6. *Odontomachus hæmatoda desertorum* subsp. nov.

Worker. Length 9–10 mm.

Larger and more robust than the subsp. *clarus*, the head and thorax more coarsely sculptured and decidedly more opaque, the whole body, except the gaster, of a deeper, richer red, the mandibles, antennæ and legs scarcely paler, the gaster black, shining. The petiole differs in shape from that of the preceding subspecies and from *clarus* in having a rather long, gradually tapering and backwardly directed point. In profile both the anterior and posterior surfaces of the node, except very near its tip, are feebly convex. Pilosity and pubescence as in *clarus*.

Described from nine workers taken in the dry arroyo back of the Carnegie Desert Laboratory, near Tucson, Arizona. They were running over the dry soil. I did not succeed in finding the nest.

Subfamily DORYLINÆ.

7. *Eciton* (*Acamatus*) *leonardi* sp. nov.

Worker. Length 2-3 mm.

Head distinctly longer than broad, slightly broader in front than behind, with feebly convex sides and feebly excised posterior border. Eyes absent. Mandibles with 4 teeth, a prominent one at the tip and one at the base of the apical border and two smaller ones near the tip and separated by a concave diastema from the basal tooth. Antennal scapes slender at the base, but rapidly enlarging towards their tips, less than half as long as the head; funiculus not enlarged distally, joints 2-6 slightly broader than long, remaining joints at least as long as broad. Thorax less than $\frac{3}{4}$ as broad and about as long as the head including the mandibles, slightly broader anteriorly, with distinct mesoepinotal and, in the large worker, very feebly indicated promesonotal suture, and slightly constricted at the former. Pronotum without a transverse anterior carina, about twice as long as the epinotum, in profile feebly rounded dorsally and a little higher than the epinotum; base and declivity of the latter subequal, the base with a somewhat triangular impression in the middle line at its anterior border. Petiole from above rectangular, about $\frac{1}{2}$ longer than broad, with straight, subparallel sides, in profile convex and evenly rounded above, its ventral surface slightly concave and with a small blunt tooth anteriorly. Postpetiole broader than long, distinctly broader than the petiole, a little broader behind than in front, with straight anterior and posterior borders and rounded sides. In profile this segment appears much shorter than high and has a distinct tooth at its antero-ventral border. Gaster oval, pointed, somewhat larger than the head. Legs rather short and slender; tarsi with simple claws.

Shining: mandibles rather coarsely striatopunctate; head and prothorax covered with sparse, rather coarse, piligerous punctures; on the remainder of the body these punctures are finer and much less conspicuous. Impression at base of epinotum slightly opaque and transversely shagreened.

Hairs pale yellow, only moderately long and abundant, erect or suberect on the body, legs and scapes; shorter on the funiculi; pubescence very sparse but rather long, visible on the gaster and posterior portion of the head.

Reddish yellow; clypeal region and mandibles red, the teeth of the latter black.

Described from three workers taken by Mr. Percy Leonard on Point Loma near San Diego, California. This species belongs to the group of small *Ecitons* including *E. californicum* Mayr, *nitens* Mayr, *commutatum* Emery, *pauvillum* Wheeler and *angustinode* Emery. From *pauvillum* it is readily distinguished by its greater size, the shape of the head, mandibles and pedicel; from *angustinode* by the greater size, much broader pedicel, more slender antennæ, shining epinotum, etc.; from *californicum* by the shape of the head, mandibles and pedicel, shorter thorax and different sculpture; from *nitens* by its smaller size and the absence of a pronotal carina, the shape of the mandibles, etc.; from *commutatum* by the shape of the mandibles, more slender antennæ and much feebler mesoepinotal suture.

Subfamily MYRMICINÆ.

8. *Cardiocondyla emeryi* Forel.

A single worker of this species, which has not before been recorded from the United States, was sent me by the American Museum of Natural History from Miami, Florida. The species is widely distributed in the West Indies (St. Thomas, St. Vincent, Bahamas, Cuba, Porto Rico, Jamaica) and in several localities in the Old World tropics (Palestine, India, Madagascar, Polynesia).

9. *Solenopsis picta* Emery var. *moerens* var. nov.

Worker. Differing from the type of the species from Florida only in color, the whole body being uniform piceous brown, the mandibles, antennæ and legs brownish yellow.

Six workers taken by Mr. J. D. Mitchell from a dead pecan twig at Victoria, Texas.

10. *Solenopsis huachucana* sp. nov.

Worker. Length 1.5–2 mm.

Head subrectangular, distinctly longer than broad, a little broader in front than behind, with rounded posterior corners and nearly straight posterior and lateral borders. Eyes large, convex, with 6–8 facets in their greatest longitudinal diameter. Clypeus prominent, with strong median carinæ terminating at the anterior margin in two large, acute teeth; lateral teeth small and blunt, indistinct in some specimens. Mandibles with oblique 4-toothed apical margins. Antennæ slender, scapes reaching $\frac{3}{4}$ the distance from the eyes to the posterior corners of the head, club not longer than the remainder of the funiculus, but much broader, its basal fully half as long as its terminal joint; first and second joints much longer than broad, joints 3–8 fully as long as broad, at least in large individuals. Thorax through the pronotum a little more than half as broad as the head; in profile the dorsal outline of the pronotum is convex in front and straight and sloping behind to the short but pronounced mesoëpinal constriction; epinotum with the base longer than the declivity, the former convex in profile, the latter sloping and concave, the angle between the two surfaces obtuse and much rounded. Petiole with a very short, narrow peduncle, the node slightly broader than long; postpetiole slightly lower and broader, nearly spherical above, a little broader than long; neither petiole nor postpetiole with a distinct tooth on the ventral side. Gaster elliptical, its anterior border concave in the middle.

Smooth and shining throughout, with very sparse and indistinct piligerous punctures on the body and legs.

Hairs whitish, bristly, of unequal length, erect on the body and moderately abundant, shorter on the antennal scapes and legs.

Yellow; posterodorsal portion of head and posterior half of gaster infuscated; some specimens also with the thorax slightly fuscous. Mandibular teeth black.

Female (deallated). Length 5.5 mm.

Head as long as broad, subrectangular, with rather convex sides and feebly excised posterior border. Eyes convex, nearly $\frac{2}{3}$ as long as the sides of the head. Antennal scapes not reaching half way between the posterior border of the eyes and the corners of the head. Mandibles with only 3 teeth. Lateral clypeal teeth obsolete. Thorax elongate elliptical, nearly three times as long as broad; epinotum rounded and sloping, without distinct base and declivity. Petiole not distinctly pedunculate, node high, compressed anteroposteriorly, its anterior slope concave in profile and rapidly rising to the rather acute summit, the posterior slope straight and abrupt. Postpetiole short, transversely elliptical, but little broader than the petiole.

Surface shining and very sparsely and minutely punctate as in the worker; erect hairs more abundant and more yellowish. Color of body rich yellowish testaceous, with a broad band across the posterior portion of the first gastric segment and the basal portions of the succeeding segments dark brown; mandibles and clypeus red.

Described from two females and numerous workers taken from two nests under stones in Miller Cañon, Huachuca Mts., Arizona, at an altitude of about 5500 ft. This species is readily distinguished in the worker phase from all the described forms of *Solenopsis* from the United States, except those of the *geminata* group, by its much larger eyes. There is a slight but distinct tendency to polymorphism in the worker adumbrating the condition seen in *geminata* Fabr. and *wasmanni* Emery.

11. *Solenopsis aurea amblychila* subsp. nov.

Worker. Differing from the typical *aurea* Wheeler in having the two carinae terminating bluntly behind or at the anterior border of the clypeus and not projecting beyond the border as two acute teeth, in having the funicular joints 2-7 distinctly longer and in the mesoepinotal suture, which, though as deeply impressed as in *aurea*, is more acute, i. e., not so broad at the bottom. The profile outline of the thorax is therefore different, the base of the epinotum and the posterior surface of the epinotum being more nearly straight in *aurea* and more rounded in the new subspecies.

Female. Differs from that of *aurea* in the same clypeal characters as the worker.

Male. Indistinguishable by any satisfactory characters from the male of *aurea*.

Described from many specimens taken from populous colonies nesting under large stones in the Huachuca Mts., Arizona (Ramsay Cañon 4800 ft.; Hunter's Cañon 5500 ft.; Carr Cañon 6000 ft.; Miller Cañon 5000-5400 ft.). I have also received a series of workers, males and females, from Guadalajara, Mexico, taken by Mr. J. F. McClendon.

12. *Solenopsis geminata sævissima* F. Smith.

In a recent revision of the *Solenopsis* species of the *geminata* group, Forel has made the important discovery that one of the forms generally attributed to this species lacks the large soldier phase, so that the worker caste is much less polymorphic. This form he originally described as the subsp. *pylades* from a female taken in Mexico, and to it he later referred workers from Colombia, Amazonas, Pará, São Paulo, Argentina, etc. I have recently revised the large amount of *geminata* material in my collection, and, although I am able to recognize most of the forms cited by Forel, I find myself unable to accept his interpretation and the name *pylades*. Forel is undoubtedly right in regarding this as a distinct form, but it is equally certain that it had been previously described by Fred. Smith under the name *sævissima*. In the first place, Smith's description is unusually good and applies perfectly to the typical yellow *pylades*. In the second place, his specimens were received from Bates, who gives an interesting account of the habits of this "fire ant" in Brazil. Moreover, Mr. W. M. Mann, who collected extensively in the region where Bates secured his specimens and made his observations, tells me that it is there the only common and widely distributed *Solenopsis*, and the numerous specimens collected by Mr. Mann prove to be typical *pylades* Forel. I believe I am justified, therefore, in resuscitating Smith's *sævissima* and in relegating *pylades* to the synonymy, but owing to the existence in the United States of the two following forms, which are clearly intermediate between *sævissima* and *geminata*, I am unable to regard the former as anything more than a subspecies of the latter.

13. *Solenopsis geminata xyloni* MacCook.

This form is widely distributed in Texas and is probably the same as the ant described by Buckley as *Myrmica sabeana*. The worker measures 2-5.5 mm. in length. The largest specimens are shaped like moderately large *geminata* workers, with rectangular head and the tips of the antennal scapes reaching on the sides of the head half way between the eyes and the posterior corners, but the surface of the head is much smoother and the scattered punctures much smaller, though larger and more conspicuous than in *sævissima*. The mandibles are not abruptly curved as in the largest workers of the true *geminata*. The color is variable, being in some of the largest workers deep red, with the posterior half of the gaster black, in others

the body is blackish red, with the mandibles and the anterior half or two thirds of the head light red, the legs dark red or with the femora infuscated. Small workers are black or very dark red, with the anterior part of the head paler.

The female measures 6-7 mm. The head is intermediate in size and shape between that of the female *savissima* and *geminata*, the antennal scapes are also intermediate in length and the punctures on its upper surface are smaller than in *geminata* but more distinct than in *savissima*. The mandibles have the same curvature as in the latter form. The coloration is that of the largest workers.

In the male the head is more opaque and punctate, as in the true *geminata*, and not so smooth as in *savissima*, and the thorax has three broad, longitudinal red stripes.

I have seen large series of this ant from many localities in Central and Western Texas (Austin, Fort Davis, etc.), from Arizona (Phoenix, Huachuca Mts.) and Mexico (Guadalajara).

14. *Solenopsis geminata maniosa* subsp. nov.

Smaller than the other forms of *geminata* in all three phases, the worker measuring only 1.8-4.5 mm., the female 5-6 mm., the male 4-5 mm. The head of the largest worker is less rectangular and more rounded, owing to its distinctly more convex sides, the color is a rich light reddish yellow, with the posterior half of the gaster black and the borders of the gastric segments yellowish. The head, thorax and pedicel of the smallest workers are scarcely darker, with nearly the whole of the gaster black or dark brown.

In the female the head is rather rectangular, with straight posterior border, the mandibles are gradually curved, the antennal scapes reaching nearly to the posterior corners. The color is rich yellowish red, the mesonotum, except its middle line and the scutellum, brownish. In some specimens the whole gaster is black, with only the extreme base red, in others it is red with a broad black band across each segment. These bands are sometimes connected by a longitudinal middorsal stripe of the same color.

This is the common and perhaps the only form of *geminata* in Southern California. I have taken it in large colonies under stones and in diffuse and irregular crater nests in dry deserts and arroyos in the following localities; San Ysidro, near Santa Barbara (type locality), Pasadena, Claremont, La Jolla, San Diego, and Needles, and have received specimens from Los Gatos, Mt. Diablo Range (J. C. Bradley), Whittier (H. L. Quayle), Visalia (Culbertson), Jacinto Barranca, Fresno County (J. C. Bradley),

Eaton's Cañon, Los Angeles County, Fresno, Brookdale and Friant (R. V. Chamberlin). I have also met with it in Arizona (Tucson, Tempe, Benson) and have received specimens from Thatcher (R. V. Chamberlin) in the same state, from Alamito, New Mexico (G. von Krokow) and Ojos del Diablo, in Chihuahua, Mexico (C. H. Tyler Townsend).

As a result of the study of my material I submit the following arrangement of the species, subspecies and varieties of *Solenopsis* of the *geminata* group:

1. *Solenopsis geminata* Fabricius
 - var. *diabola* Wheeler
 - var. *nigra* Forel
 - subsp. *medusa* Mann subsp. nov. (in MS.)
 - subsp. *rufa* Jerdon
 - var. *micans* Stitz.
 - subsp. *xyloxi* MacCook
 - subsp. *maniosa* subsp. nov.
 - subsp. *savissima* F. Smith (= *pylades* Forel)
 - var. *richteri* Forel
 - var. *incrassata* Forel
 - var. *tricuspis* Forel
 - var. *quinquecuspis* Forel
 - subsp. *electra* Forel.
2. *Solenopsis aurea* Wheeler
 - subsp. *amblychila* subsp. nov.
3. *Solenopsis gayi* Spinola.

15. *Pheidole longipes* Pergande.

This interesting species was originally described by Pergande from Lower California as a race (subspecies) of *Ph. susannæ* Forel, and is evidently the form mentioned as a variety of this ant by Emery in his "Beiträge" (p. 297) as occurring in California. I possess a worker cotype from the Pergande collection and also a worker from Emery taken at San Jacinto, Cala. Forel has shown that *longipes* is an independent species quite distinct from *susannæ*. During the winter of 1910 I found *longipes* in several localities in the vicinity of San Diego, California, especially at La Jolla and Lakeside. It makes rather large mound-nests not unlike those of *Ph. morrisi* Forel in the South Atlantic States. The female (deälated), which has not been described, measures nearly 6 mm. and is of a deeper ferruginous red color than the soldier, with paler and more yellowish legs. The whole body, including the gaster, is opaque, with only the borders of the mandibles and frontal area shining. The epinotum has a broad median impression and bears a pair of moderately large spines, which are laterally compressed

and fully as long as broad at their bases; the postpetiole is nearly twice as broad as long, with bluntly conulate lateral borders. The pubescence is sparse but distinct, especially on the gaster. The surface of the thorax is densely rugulose-punctate, the pedicel and gaster densely and finely punctate, with larger, sparser piligerous punctures. The sculpture of the head resembles that of the soldier but is much coarser and the longitudinal rugæ are longer and more prominent. In the worker the epinotal spines are distinctly longer than in the cotype from Lower California, and additional material from this locality may show that the Californian form is a distinct variety.

16. *Pheidole militicida* sp. nov.

Soldier. Length 8 mm.

Head large, subcordate, scarcely longer than broad, distinctly broader behind than in front, with very deeply and angularly excised posterior border, in profile moderately convex above and below, the greatest depth being in the middle; cheeks slightly concave; eyes small, about $\frac{1}{4}$ the length of the head from the anterior corners. Occipital furrow deep. Mandibles very convex, bluntly bidentate at their tips. Clypeus short, flat, ecarinate, its anterior border distinctly notched in the middle. Frontal area elongate, deep, triangular, smooth, without a median carinula. Frontal carinæ short, strongly diverging. Antennæ small, slender; scapes much curved but not flattened at the base, reaching only as far as the eyes, joints 2-8 of the funiculus slightly longer than broad, club shorter than the remainder of the funiculus, its two basal joints subequal, together a little longer than the terminal joint. Thorax robust, with rather prominent, rounded humeri, the distance between which is less than half the width of the head; pro- and mesonotum forming together a sub-spherical mass in profile, the mesonotum being without a transverse constriction or torus. Mesoëpinotal constriction very deep. Epinotum short and high, its base in profile convex and passing into the sloping concave and somewhat longer declivity without a distinct boundary; spines stout, blunt, half as long as the distance between their bases, with slightly recurved tips, directed upward and somewhat outward and backward. Petiole from above but slightly longer than broad, with short, indistinct peduncle, broadest through the node, which is transverse, much compressed anteroposteriorly, with sharp, broadly excised border. Postpetiole somewhat less than twice as broad as the petiole, nearly twice as broad as long, forming above a low, anteroposteriorly compressed node, its sides produced in the middle as distinct conules. Gaster somewhat smaller than the head, flattened, broadly elliptical. Legs rather long and slender.

Shining; mandibles and posterior $\frac{3}{4}$ of head sparsely and rather finely punctate; sides of clypeus and anterior third of head sharply and rather finely longitudinally rugose, the rugæ between the frontal carinæ diverging posteriorly, those on the cheeks separated by punctate spaces. Base of epinotum transversely, its sides irregularly rugulose; anterior surface of postpetiolar node with a series of short, parallel grooves. Gaster and legs with scattered, piligerous punctures.

Hairs rather short, golden yellow, abundant, erect or suberect, covering the whole body, scapes and legs.

Reddish testaceous; gaster and legs yellow; borders of mandibles, anterior border of head and occipital groove black.

Worker. Length 3-3.5 mm.

Head subrectangular, as broad as long, with nearly straight posterior border and very feebly convex sides, with the eyes just in front of the middle. Mandibles with oblique blades furnished with two large apical and several smaller basal teeth. Clypeus convex, with entire, rounded anterior border. Antennæ similar to those of the soldier, but with the scapes extending a little beyond the posterior corners of the head. Thorax differing from that of the soldier in being more slender, with the mesonotum and base of epinotum long and rather straight in profile and the spines reduced to minute, erect teeth. Petiolar node compressed, sharp and transverse as in the soldier, but the border, seen from behind, is straight and entire. Postpetiole about twice as broad as the petiole, rounded in front above, without lateral conules, the sides rather straight behind, in profile feebly convex above. Gaster a little smaller than the head.

Shining; mandibles somewhat opaque; their bases and the cheeks longitudinally rugulose and punctate; sides of meso- and epinotum irregularly rugulose-punctate.

Hairs white, long, of unequal length, moderately abundant, erect on the body, on the legs and scapes shorter and more oblique.

Black; mandibles brownish yellow, with black teeth; clypeus, antennæ, tarsi, funiculi, articulations of legs and posterior borders of gastric segments brown.

Described from several soldiers and workers taken from a number of colonies in the desert at Hereford and Benson (alt. 3600 ft.), in Southern Arizona. This species is very closely related to *Ph. macclendoni* Wheeler, but both the soldier and worker are larger, the former is monomorphic, has the frontal area distinct and the rugosity not extending so far back on the head and the petiole and postpetiole are of a different shape when seen from above, the latter being larger, rounded above and with blunter sides, the thorax is more extensively sculptured, etc. The workers of the two species are more similar, but besides the difference in size, that of *macclendoni* is brown, with darker head and gaster.

The nests of *Ph. militicida* are small craters, 3-5 inches in diameter. When I found them at Hereford and Benson during November 1910, they were covered with masses of chaff, showing that the ant is a true harvester. Only workers could be obtained by the most diligent excavation of the nests, but among the chaff on nearly all the craters the workers had deposited numerous heads and dismembered bodies of soldiers. Mr. W. M. Mann, who collected at Hereford during August took living soldiers in the nests and from his specimens the foregoing description of the soldier is drawn. It appears, therefore, that all the individuals of this caste are regularly killed off by the workers on the approach of winter, probably after they have broken open all the hard seeds collected by the workers. Such a slaughter of the members of a large caste during a season when their activities are no longer required, when they would simply be a burden on the colony by con-

suming stored food and when fresh food cannot be collected, must have great advantages. Although I have never noticed this behavior in other species of *Pheidole*, I believe that a study of the harvesting species with very large-headed soldiers in the deserts of the southwest may bring other similar cases to light.

17. *Pheidole spadonia* sp. nov.

Soldier. Length 4-4.5 mm.

Head very large, subrectangular, $1\frac{1}{2}$ times as long as broad, distinctly broader in front than behind, with straight sides and rounded posterior lobes, separated by a deep occipital excision, which is continued forward as a pronounced occipital groove to the middle of the head. In profile it is most convex in the middle and distinctly compressed dorso-ventrally behind. Eyes rather small, flattened, at the anterior fourth of the sides. Mandibles very convex, with two large apical and one or two small basal teeth. Clypeus very short, its anterior margin broadly excised in the middle, its central portion feebly convex but not carinate. Frontal area triangular, rather deep. Frontal carinae short, diverging. Antennae very small and slender, the scapes curved but not flattened at the base, not reaching to the eyes; funicular joints 2-8 distinctly longer than broad; club shorter than the remainder of the funiculus, its two basal joints subequal, together as long as the terminal joint. Thorax short, robust, through the prominent humeri not more than half as broad as the head. In profile the pronotum is rather straight and sloping, forming a blunt obtuse angle with the mesonotum, which is of the same length and slopes backward at a slighter inclination but terminates near the mesoepinotal suture in a sharp, narrow, transverse torus with abrupt, concave posterior slope. Epinotum with subequal base and declivity, the latter sloping, concave; spines rather slender and pointed, as long as broad at their laterally compressed bases, twice as far apart as long, directed upward and outward. Petiole from above with extremely short peduncle, subrectangular, as broad in front as behind, with sharp anterior angles; in profile the node has a long concave anterior and abrupt, straight posterior surface, its border is transverse, rather sharp and feebly excised in the middle. Postpetiole nearly 3 times as broad as the petiole and four times as broad as long, its sides produced as prominent pointed projections with convex anterior and concave posterior borders. Gaster broadly elliptical, much smaller than the head, somewhat flattened dorso-ventrally. Legs rather long, with stout femora.

Shining; mandibles smooth, with sparse and very small piligerous punctures; clypeus smooth and shining in the middle, longitudinally rugulose on the sides; anterior half of head very sharply, longitudinally rugulose, the rugae on the front distinctly diverging, those on the cheeks parallel. Posterior half of head, pro- and mesonotum smooth and shining, with very small, scattered piligerous punctures; metanotum feebly and indistinctly rugulose-punctate, the declivity of the epinotum between the spines finely transversely rugulose. Petiole and postpetiole with fine, dense, shallow punctures on the sides so that these parts appear a little more opaque. Gaster smooth and shining, with fine, scattered, piligerous punctures.

Hairs golden yellow, coarse, of unequal length, rather long and abundant, suberect; longer and more reclinate on the gaster, shorter and oblique on the legs and scapes.

Testaceous yellow; legs a little paler; mandibles and clypeus deep red, with black borders; petiole and postpetiole brownish, gaster also faintly tinged with brown.

Worker. Length: 1.5 mm.

Head as broad as long, subrectangular, with feebly convex sides and feebly excised posterior border; anterior clypeal margin entire, broadly rounded. Antennal scapes reaching a little beyond the posterior corners. Pro- and mesonotum together convex and evenly rounded above, the latter without a torus. Base of epinotum feebly convex, longer than the declivity; spines reduced to small, slender, erect teeth. Petiole from above twice as long as broad, with concave sides; node rounded, entire; postpetiole about $\frac{1}{2}$ again as broad as the petiole, convex and rounded above, transversely elliptical, distinctly broader than long. Gaster about the size of the head.

Smooth and shining; mandibles finely striato-punctate; cheeks longitudinally rugulose. Mesopleuræ, epinotum and petiole slightly opaque, densely punctate.

Pilosity similar to that of the soldier, but hairs on the body more obtuse. Color like that of the soldier but the head and thorax more brownish; mandibles and clypeus not darker than the anterior portion of the head; legs and antennæ yellowish.

Described from six soldiers and nineteen workers taken on the banks of the Santa Cruz River at Tucson, Arizona. The nests were incomplete craters in sandy soil exposed to the sun, with small entrance and the excavated sand dumped to one side. Only one or two soldiers were found in a nest. The species is apparently carnivorous.

This ant at first sight seems to be very closely related to the South American *Ph. stulta*, but the soldier is at once distinguished by the absence of a carina on the clypeus and considerable differences in the shape of the petiole and postpetiole. The worker is much smaller than that of *stulta*, with much shorter antennal scapes, longer epinotal spines, shorter thorax, etc.

18. *Pheidole virago* sp. nov.

Soldier. Length 4-4.5 mm.

Head very large, about $\frac{1}{2}$ longer than broad, distinctly broader behind than in front, with straight sides, and prominent, rounded posterior lobes, separated by a very deep occipital excision continued forward nearly to the frontal area as a deep groove. In profile the head is convex above and below and very slightly compressed in the region of the posterior lobes. Eyes rather small and flat, near the anterior fourth of the head. Mandibles very convex, with two blunt apical teeth. Clypeus very short, its anterior border feebly and sinuately excised in the middle, median surface feebly convex, with indistinct carina. Frontal area distinct, broadly triangular. Frontal carinæ short, diverging. Antennæ small and slender; scapes curved, but not flattened at the base, not reaching to the eyes; funicular joints 2-8 subequal, a little longer than broad; club shorter than the remainder of the funiculus, the two basal joints subequal, together a little longer than the terminal joint. Thorax

very short and robust, narrower through the prominent but rounded humeral angles than half the head; pronotal surface in profile slightly convex, sloping anteriorly; mesonotum straight and sloping backward, with a distinct but blunt torus near its posterior margin; epinotum as broad as long; base and declivity in profile subequal, the latter sloping; spines stout, blunt, half as long as the base and half as long as their distance apart at the base, directed upward and slightly outward and backward. Petiole from above with very short peduncle, $1\frac{1}{2}$ times as long as broad, somewhat broader behind through the node, which is transverse, with long, concave anterior and short, abrupt posterior declivity, the border rather sharp and distinctly excised in the middle. Postpetiole more than twice as broad as the petiole and nearly 3 times as broad as long, its sides produced as blunt points with convex anterior and concave posterior borders. Gaster much smaller than the head, broadly elliptical and somewhat flattened. Legs long, with moderately thickened femora.

Shining; mandibles with a few coarse punctures near the apical borders and smaller, scattered punctures on the remaining surface. Clypeus longitudinally rugulose even in the middle. Anterior $\frac{2}{3}$ of head with rather sharp, fine longitudinal rugæ, those on the front diverging; posterior third smooth, with much scattered, coarse and rather elongated punctures. Pro- and mesonotum transversely, mesopleuræ and sides of epinotum longitudinally rugulose; concave declivity of epinotum between the spines indistinctly and finely transversely rugulose. Petiole and postpetiole slightly opaque, upper surface of latter with a row of large, elongate, piligerous punctures. Gaster shining, minutely shagreened and with scattered piligerous punctures.

Hairs yellow, rather coarse, suberect, of unequal length, moderately abundant, scarcely longer on the gaster than on the head; shorter and somewhat more oblique on the legs and antennal scapes.

Head yellowish red; mandibles dark red, their borders and the sides and anterior border of the clypeus blackish; thorax and pedicel brown, the postpetiole darker; gaster black, with brown posterior borders to the segments; legs brownish yellow; antennæ scarcely paler than the head.

Worker. Length: 1.5 mm.

Head a little longer than broad, subrectangular, with feebly convex sides and straight posterior border, feebly notched in the middle. Anterior border of clypeus entire, broadly rounded. Antennal scapes reaching a little beyond the posterior corners of the head. Thorax broad through the pronotum, with rather prominent humeri; pro- and mesonotum in profile convex and rounded above, the latter without a torus; epinotal base longer than the declivity; spines small, slender, erect and rather blunt at their tips. Petiole nearly three times as long as broad, with concave sides, its node narrow, with blunt, entire upper margin. Postpetiole less than twice as broad as the petiole, nearly as long as broad, convex above, with feebly angular sides. Gaster somewhat smaller than the head.

Mandibles, head, thorax and pedicel subopaque; gaster shining; mandibles striatopunctate; clypeus and head longitudinally rugulose, the latter with finely punctate interrugal spaces; thorax and pedicel finely and densely punctate; pronotum above vermiculately or reticulately rugulose-punctate.

Hairs whitish, sparse and erect on the body, much shorter and more appressed on the appendages.

Brown, with slightly paler appendages; gaster black, with brown posterior margins to the segments.

Described from six soldiers and six workers, taken in the valley of the Santa Cruz River, near Tucson, Arizona, in the same place as the preceding species. The colonies were small and contained very few soldiers. Like the preceding this species is probably carnivorous. The nests were perfect craters, 3-5 inches in diameter, with a large central opening half an inch in diameter.

Pheidole virago is related to *Ph. guilelmi-muelleri* Mayr and *androsana* Whlr., but the sculpturing of the head of the soldier is more extensive and of a different character in both of these species, and the antennal scape in *guilelmi-muelleri* is dilated and flattened, while *androsana* has a smooth, differentiated, scrobe-like area for the antennal scape and the frontal carinae are prolonged backwards.

19. *Pheidole fimbriata* Roger.

Some years ago I described a large dealated female *Pheidole* taken by Oslar at Nogales, Southern Arizona, as *Ph. rhea*. More recently I received from Dr. A. G. Ruthven several winged specimens of this same ant from Cuatololapan, Vera Cruz, Mexico, accompanied by the soldiers and workers. The latter prove on examination to be specimens of *Ph. fimbriata* Roger, a species widely distributed through tropical America, so that the name *rhea* must be relegated to the synonymy. The wings of the female are nearly 16 mm. long, heavily infuscated, with dark brown veins and stigma.

20. *Pheidole tepicana cavigenis* subsp. nov.

Soldier. Differing from the typical *tepicana* Pergande in the shape and sculpture of the head, the shape of the pedicel and in color. The head is proportionately shorter and the sides are straight and subparallel (in *tepicana* feebly convex) but distinctly concave at and in front of the eyes, with the anterior angles prominent and everted. The eyes are distinctly larger and more convex, the rugae on the front and sides of the head are more distinct, but the transverse rugae on the occiput are feebler and more reticulate. The petiolar node is perceptibly emarginate (entire in *tepicana*), and the postpetiole is decidedly broader. The thorax and petiole are concolorous with the head, the mesonotum infuscated and the vertex with a black spot.

Described from three specimens (one immature) taken from a single small colony in Miller Cañon, Huachuca Mts., Arizona (5600 ft.). These have been compared with Mexican specimens of a form which agrees very closely with Pergande's *tepicana*, except in color.

21. *Pheidole kingi torpescens* subsp. nov.

Soldier. Differing from that of *kingi* and its subspecies *instabilis* Emery in the shape of the head, which is distinctly shorter in proportion to its width and decidedly broader behind than in front (if anything broader in front than behind in *kingi* and *instabilis*), with the occipital excision deeper and the occipital groove broader. The intermediates also have the same type of head, whereas in the forms previously mentioned it is distinctly broader in front than behind. In *instabilis* the head is darker in color, while in *torpescens* it is uniformly ferruginous red as in the soldier.

Worker. Colored like the worker of the true *kingi* and therefore paler than in *instabilis*, with the antennal scapes extending well beyond the posterior corners of the head as in that form (in *kingi* reaching only a little beyond the posterior corners). The epinotum bears minute spines or teeth as in *kingi*. These are reduced to mere angles in *instabilis*.

Described from single soldier and worker specimens and two intermediates taken from a small nest under a stone near the Carnegie Desert Laboratory at Tucson, Arizona.

22. *Pheidole xerophila pacifica* subsp. nov.

Soldier. Differing from the typical *xerophila* Wheeler in the following particulars: the head is slightly broader behind, much less punctate on its posterior $\frac{2}{3}$ and therefore as in the subsp. *tucsonica* Wheeler and of a deeper red color, with a black spot on the vertex. The sculpture of the thorax is much as in the typical *xerophila*, with the pronotum shining, but the petiolar node is excised as in *tucsonica*. The epinotal spines are more slender and somewhat longer than in either of the previously described forms. The thorax, pedicel and gaster are dark chestnut brown or blackish, the legs and posterior edges of the gastric segments yellowish brown.

Worker. Differing from the workers of *xerophila* and the subsp. *tucsonica* especially in the sculpture of the head and in the paler color. The head is subopaque or shining only on the vertex, not glabrous behind the cheeks but with the whole upper surface delicately longitudinally rugulose and reticulate-punctate. Specimens vary from light to dark castaneous brown, the head and thorax being sometimes nearly black, the mandibles, clypeus, antennæ and legs light yellowish brown.

Female. Length: 5.5–6 mm.

Head subrectangular, broader than long, broader behind than in front with straight sides and posterior border. Antennal scapes reaching halfway between the eyes and the posterior corners of the head. Thorax as broad as the head, flattened above, base of epinotum half as long as the declivity; spines stout, as long as broad at their bases. Petiole similar to that of the soldier, postpetiole about twice as broad as the petiole, and nearly twice as broad as long, its sides produced in the middle as two rather blunt points. Gaster suboblong, more than twice as long as broad, flattened dorsoventrally. Wings long (nearly 7 mm.).

Mandibles shining, coarsely and sparsely punctate. Head opaque, longitudinally rugose, with punctate or reticulate interrugal spaces. Thorax and gaster

shining; pronotum transversely rugose, mesonotum, scutellum and mesopleuræ coarsely and sparsely punctate, mesonotum also with a patch of longitudinal rugæ near its posterior margin. Epinotum, petiole and postpetiole opaque, densely punctate. Gaster with fine piligerous punctures.

Hairs more abundant than in the soldier, but more appressed, short and inconspicuous on the appendages.

Head ferruginous red, borders of mandibles and an ocellar spot black. Remainder of body deep castaneous brown, pleuræ and posterior borders of gastric segments paler; antennæ and legs brownish testaceous. Wings grayish hyaline, with pale brown veins and dark brown stigma.

Male. The head is opaque and densely longitudinally rugulose and punctate (shining in the male *xerophila*), the veins of the wings are somewhat darker and the petiolar node is higher and somewhat more acute in profile than in the type of the species.

Described from numerous specimens of all four phases taken at Pasadena and Lakeside, Southern California, during late November, 1910. The colonies were found on the dry open hills in small crater nests, the periphery of which was often covered with discarded chaff and seeds, proving that the species is a harvester. Only a few soldiers were found in each nest. The presence of males and winged females in late November shows that these phases are probably retained in the nests throughout the winter as in *Prenolepis imparis*, *Camponotus americanus* etc., and that the nuptial flight as in these ants probably occurs in the very early spring.

23. *Pheidole vinelandica longula* Emery var. *castanea* var. nov.

Differing from the typical *longula* in its much darker coloration, the body of the soldier being rich chestnut brown, the anterior border of the gaster, the posterior border of the head, the cheeks, disks of mandibles, clypeus, legs, antennæ, pleuræ and epinotum somewhat paler and more reddish. The coloration of the worker is similar, except that the posterior portion of the head and the anterior portion of the gaster are dark like the remainder of these regions.

Described from six soldiers and thirteen workers taken in Miller Cañon, Huachuca Mts., Arizona, at an altitude of 6000 ft.

24. *Pheidole vinelandica cerebrosior* subsp. nov.

Soldier. Like the typical *vinelandica* in color, sculpture and pilosity, but the head decidedly larger though not proportionally longer, and with the postpetiole twice as broad as the petiolar node and produced on the sides as pointed conules.

Worker. Differing from the worker of the typical *vinelandica* only in having the fine punctuation of the thorax and pedicel stronger and these parts therefore more opaque and the erect hairs somewhat less abundant and more obtuse at their tips.

Described from thirteen soldiers and ten workers taken in the dry desert near Tucson, Arizona.

25. *Pheidole californica* Mayr.

Considerable series of this ant collected in various localities in California enable me to state that Emery's account of its characters and of those of his *oregonica* needs revision. He states that the transverse rugæ on the back of the head of the soldier of *californica* pass over on the sides into the longitudinal rugæ (of the cheeks), but this is not implied in Mayr's description, it is not the case in a typical specimen of *californica* which Emery kindly sent me many years ago nor is this condition apparent in any of the numerous specimens I have since seen.

The *soldier* of the species measures 2.3–2.5 mm. and may be readily recognized by the following characters: The head is decidedly longer than broad, a little broader behind than in front, with feebly convex sides, flattened above and below, with its greatest dorsoventral diameter through the eyes, the posterior orbits of which are at the anterior third of the head. The transverse occipital rugæ are coarse and reticulate as Mayr states, and terminate on the posterior corners. The anterior third of the head is strongly, longitudinally rugose and between this sculptured region and the posterior rugæ the surface is very shining and sparsely and coarsely punctate. The thorax is densely punctate and shagreened and subopaque, with the exception of the pro-mesonotal convexity, which is smooth and shining. The postpetiole is, as stated by Emery, trapezoidal, broadest through its anterior corners, which are rounded. Specimens of the typical coloration are rufo-testaceous, with the legs yellow and the gaster somewhat infuscated. The hairs are yellowish, rather long and abundant, of uneven length on the body, suberect on the body and scapes, short and subappressed on the legs.

The *worker* measures 1.6–2 mm., has the head very smooth and shining, the thorax sculptured as in the soldier, the postpetiole small and subglobular, the epinotal spines small, as long as broad at the base. Pilosity similar to that of the soldier but sparser. Coloration rufotestaceous, upper surface of head and gaster dark brown; legs, clypeus, mandibles and antennæ yellow.

The *female* (deallated) measures nearly 4 mm.

Head about as broad as long, subrectangular with straight sides and broadly excised posterior border, rather convex above. Antennal scapes reaching to half the distance between the eyes and the posterior corners. Thorax as broad as the head, oval, narrowed behind, the mesonotum and scutellum very flat. Epinotal spines short, triangular, acute. Petiolar node in profile acute, its border seen from behind straight, transverse and entire. Postpetiole less than twice as broad as the petiole, broader than long, with blunt lateral conules. Gaster elongate elliptical.

Head longitudinally and coarsely rugose, except the occiput, which is transversely rugose and very coarsely punctate. Thorax opaque and densely punctate, except the mesonotum and scutellum, which are smooth and shining, with a few sparse punctures. Petiole and postpetiole opaque and densely punctate, except the node

of the latter, which is smooth and shining. Gaster shining, with fine, sparse, piligerous punctures.

Pilosity similar to that of the soldier but shorter and more uniform; hairs on the legs and antennal scapes more appressed.

Rufotestaceous; legs somewhat paler; mandibles, gaster and anterior portion of head darker and brownish, posterior margins of gastric segments yellowish.

Described from numerous soldiers and workers and one female from the following localities in California: Palo Alto (H. Heath and W. M. Mann and Wheeler); Brookdale and Santa Cruz Island (R. V. Chamberlin). The type locality is San Francisco (Schaufuss).

26. *Pheidole californica* Mayr var. *incenata* var. nov.

Slightly smaller than the typical form and differing in color, the whole body being yellow in the soldier and worker, except the mandibles and sides of the clypeus in the former, which are red, and the top of the head of the latter, which is somewhat infuscated.

Nine soldiers and as many workers taken by Prof. H. Heath at Palo Alto, California.

27. *Pheidole californica* Mayr var. *satura* var. nov.

Fully as large as the type but differing from it and the var. *incenata* in color. The soldier has the mandibles, head, thorax, and pedicel deep chestnut brown, the borders of the mandibles and the gaster black, the legs brownish yellow with the middle portions of the femora infuscated. The worker has the head, gaster and pronotum deep castaneous, the remainder of the thorax, mandibles, the pedicel clypeus, antennæ and legs brownish yellow, the femora darker, except at their bases and tips.

Described from numerous soldiers and workers taken on Santa Cruz Island, California, by Dr. Ralph V. Chamberlin and at Palo Alto, Cal., by Prof. H. Heath.

28. *Pheidole californica oregonica* Emery.

Emery described this ant as a species, but I believe that it is no more than a subspecies bearing the same relation to the typical *californica* that the typical *Ph. vinelandica* Forel bears to its subspecies *longula* Emery. The head of the *oregonica* soldier is distinctly shorter in proportion to its width than that of *californica*, and the frontal and occipital rugæ are sharper

and finer; the latter are not reticulate, and the punctures on the smooth portions of the head are much finer and less conspicuous. The postpetiole has more acute anterior angles. There is some variation in color, but none of my specimens is as dark as those described by Emery. I am unable to distinguish the workers of this form from those of *californica* by any reliable characters. Three females (deälated) measure 3.5 mm. and differ from the same sex of *californica* in having the head less coarsely sculptured and the post-petiole with more acute and longer lateral conules. The body is reddish testaceous, with a large spot on the ocellar region, three longitudinal bands on the mesonotum and the gaster behind the first segment, dark brown; legs yellowish.

Numerous specimens from the following localities; Marion County, Oregon (P. J. Schmitt), Almota, Washington (A. L. Melander); Wawawai and Pullman, Washington (W. M. Mann); and Julietta, Idaho (J. M. Aldrich).

29. *Pheidole californica nevadensis* subsp. nov.

Soldier. Resembling the typical *californica* in coloration and the shape of the head, but its sculpture is more like that of *oregonica*, with sharp, more reticulate and slightly more delicate occipital rugæ and feebler punctures on the smooth area. The thorax, however, is smooth and shining throughout, even the epinotum and the anterior corners of the postpetiole being rather sharp as in *oregonica*. In the worker the antennal scapes do not reach beyond the corners of the head and are therefore decidedly shorter than in either *californica* or *oregonica*. The thorax is smooth and shining even in the epinotal region as in the soldier. A single deälated female measures only 3.5 mm. The head is more shining and less heavily sculptured than in *californica* and the cones of the postpetiole are less produced than in *oregonica*. The body is rufo-testaceous, with a spot on the ocellar region, the mesonotum, scutellum, pedicel, and gaster castaneous. Antennæ and legs yellow, the middle portions of the femora brown.

Described from a female, four soldiers and five workers taken by Mr. W. M. Mann at Pyramid Lake, Nevada.

30. *Pheidole californica micula* subsp. nov.

Soldier. Length: 2.4-2.6 mm.

Head narrower and smaller than in the typical *californica*, with shallower occipital excision and more rounded occipital lobes, the rugæ and punctures on the head very fine and indistinct so that its whole surface is more shining; the occipital rugæ, however, very sharp and regular, not reticulate. Thorax and pedicel subopaque, very finely and densely punctate, humeri with a few rugules, pro- and mesonotum above rather smooth and shining. Gaster glabrous and shining. Epinotal spines and

anterior angles of postpetiole very blunt. Color yellow; gaster, legs and antennæ paler, mandibles often reddish, their borders and the anterior edge of the clypeus black.

Worker. Length: 1-1.3 mm.

Head more rectangular, with less convex sides than in the preceding forms; antennal scapes not extending beyond the posterior corners of the head. Sculpture of thorax and petiole as in the soldier; head very smooth and shining. Color yellow, mandibles, clypeus, antennæ and legs somewhat paler, dorsal surface of head slightly brownish.

Six soldiers and six workers taken from a single colony in Miller Cañon, Huachuca Mts., Arizona (5300 ft.). This may be a distinct species, but for the present I prefer to regard it as a very pronounced subspecies of *californica*.

31. *Pheidole hyatti solitanea* subsp. nov.

Soldier. Length 3-3.3 mm.

Even darker in color than the var. *ecitonodora* Wheeler; legs brown; decidedly smaller than this variety and the type of the species, and with the antennal scapes considerably longer, so that they reach nearly to the posterior corners of the head, epinotal spines a little more slender.

Worker. Length 2 mm.

Smaller than the worker of *hyatti* and the var. *ecitonodora*, with the posterior portion of the head and upper portion of the pronotum more glabrous and shining, and without rugules and punctures.

Female. Length: 4.5-5 mm., wings 6 mm.

Very small compared with the female of other forms of the species. Red; gaster dark brown, reddish at the base of the first segment; posterior borders of segments yellowish; antennal scapes reaching a little beyond the posterior corners of the head, somewhat less dilated at the base than in other forms of the species.

Described from seven soldiers and seven workers taken by myself on Point Loma, near San Diego, California, and a single soldier and three females taken by Mr. Percy Leonard in the same locality.

32. *Pheidole crassicornis vallicola* subsp. nov.

Soldier. Length: 3.5-4 mm.

Differing from the typical *crassicornis*, its var. *diversopilosa* Whlr. and its subsp. *porcula* Whlr. with the var. *tetra* Whlr. in sculpture, pilosity and coloration. The mandibles are coarsely striatopunctate over their whole upper surface, the clypeus is subopaque and rugulose in the middle, and the reticulate rugæ on the anterior portion of the head are coarser. The pronotum above is shagreened and rugulose and only slightly shining, the postpetiole densely punctate and subopaque-like the petiole.

The pubescence on the head, gaster, and appendages though sparse, is long and conspicuous; the erect hairs are long, pointed and very sparse, but conspicuous on the occiput, thorax, pedicel and gaster. Both hairs and pubescence are pale yellow. The body is dark chestnut brown, the mandibles, except their borders, the middle of the clypeus and the cheeks and front are deep red. Antennæ dark brown, legs paler brown.

Worker. Length: 2.3-2.5 mm.

Deep castaneous, head and gaster darker, mandibles, clypeus and legs reddish brown; punctuation of the head, thorax and pedicel coarser and deeper than in the typical *crassicornis*, only a median streak on the head and a small median spot on the thorax shining. Erect hairs more abundant than in the soldier, of uneven length and pointed; scapes with a few suberect hairs, legs with numerous more oblique hairs.

Described from seven soldiers and eleven workers taken in Miller Cañon, Huachuca Mts., Arizona (alt. 5000 ft.).

33. *Stenamma brevicorne heathi* subsp. nov.

Worker. Differing from all the known North American forms of *brevicorne* in sculpture and in its much paler color. The insect is light ferruginous red throughout, the legs and gaster very slightly paler than the head and thorax. Some specimens have a vague brownish spot on the vertex. The occiput and upper surface of the thorax are slightly shining. The rugæ of the pro- and mesonotum are coarse and reticulate and without longitudinal trend as in the other forms. Rugæ of the post-petiole similarly coarse and reticulate. Spines of the epinotum very acute, fully as long as broad at their bases. Peduncle of petiole with a small tooth anteriorly on the ventral side. Eyes small, with not more than four ommatidia in their greatest diameter. Antennal scapes a little longer than in *brevicorne* and its varieties and reaching very nearly to the posterior corners of the head.

Described from 25 workers taken from a single colony in King's River Cañon, California, by Prof. Harold Heath. This form may deserve to rank as a distinct species when the winged phases are discovered.

34. *Messor chamberlini* sp. nov.

Worker. Length: 4-4.3 mm.

Closely related to *M. andrei* Mayr, but much smaller, of a different color and with different petiole and epinotal spines. The pro- and mesonotum together are more convex and rounded above; the epinotal spines are not longer than the epinotal declivity, slightly curved, more rapidly tapering and more slender at their tips and directed somewhat more upward and less backward than in *andrei*. In profile the petiole has a lower and more rounded node and its ventral surface is straight or slightly concave in outline (in *andrei* with a distinct median protuberance). The sculpture is like that of *andrei*, but not so coarse and the general surface is a little

more shining. The hairs on the body are less abundant, those on the gula longer and forming a more distinct psammophore. The whole body is ferruginous red, except the middle portions of the femora and tibiae and the gaster posterior to the middle of the first segment. These regions are dark brown or blackish. Mandibular and clypeal borders black.

Described from 18 workers taken by Dr. R. V. Chamberlin on Santa Cruz Island, off the coast of Southern California.

35. *Aphænogaster subterranea valida* subsp. nov.

Worker. Length: 4-5.5 mm.

Differing from the subsp. *occidentalis* Emery in the more robust build of the large workers, the broader head, slightly shorter antennal scapes, heavier sculpture and much darker color. The rugosity and punctuation of the head, pleuræ and epinotum are much coarser, so that these parts and especially the epinotum are subopaque. The occiput and dorsum of the pro- and mesonotum are shining, but the mesonotum is distinctly shagreened (smooth in *occidentalis*). The epinotal spines are somewhat longer and stouter than in this subspecies. The head, thorax, petiole and gaster are deep chestnut brown, the legs and articulations of the tarsi, the neck, clypeus, frontal carinæ, antennæ, mandibles and sutures of the thorax deep red; middle portions of the femora and tibiae somewhat darker.

Female. Length: 6-6.5 mm.

Differing from the female of *occidentalis* only in the somewhat broader and more rectangular head, slightly shorter antennal scapes and darker color. In both subspecies the mesonotum and scutellum are very smooth and shining, and the wings are long and hyaline, with pale yellow veins and brown stigma.

Male. Length: 4-5 mm.

Indistinguishable from the male of *occidentalis* except in the slightly darker and more blackish color of the body and the more distinctly shagreened though scarcely less shining mesonotum. Wings colored as in the female.

Described from seven females, five males and numerous workers taken from two colonies in Cheyenne Cañon, near Colorado Springs, Colo. These colonies were very populous and were nesting under huge stones, and one of them was beginning its nuptial flight when I came upon it. There is a distinct tendency to polymorphism in the worker caste, the smaller individuals closely resembling the only worker phase of the subsp. *occidentalis*. The colonies of the latter are very small compared with those of *valida*. I have compared this form with topotypes of *occidentalis* taken by Mr. W. M. Mann at Pullman, Washington and with long series of specimens from other localities in that state, Oregon, California, Utah, Colorado, Idaho and Montana.

36. *Aphænogaster subterranea borealis* subsp. nov.

Worker. Length: 4.5–5.5 mm.

Differing from *valida*, *occidentalis* and the typical *subterranea* in sculpture and coloration. The whole head is rugulose-punctate so that the occipital region is not or only very slightly shining. The pro- and mesonotum, too, are subopaque and densely punctate. The antennal scapes are of the same length as in the other subspecies, except *valida*. The gaster and nodes of the petiole and postpetiole are deep chestnut brown, the remainder of the body light brown, the head, especially behind, somewhat darker, the legs a little paler.

Described from 13 workers taken by Prof. J. Chester Bradley at Lardo, Kootenay Lake, British Columbia.

37. *Aphænogaster mutica* Pergande.

This species was originally described by Pergande from San Jose del Cabo at the tip of Lower California. Dec. 16, 1901, I took a single worker specimen at Terlingua, Brewster Co., Texas, in the Great Bend of the Rio Grande. I have also received two workers from Dr. C. H. Tyler Townsend who took them at Cerro Chilocote in Chihuahua, Mexico. All of these specimens agree perfectly with Pergande's description.

38. *Aphænogaster texana* Emery.

Emery described this ant from two workers as a variety of *A. fulva* Roger, but study of a large series of specimens of all three phases convinces me that it should rank as a distinct species, which is, however, almost halfway between *A. fulva* and *A. mutica* Pergande. The head of the worker *texana* is more slender than that of *fulva*, including the mandibles twice as long as broad, and narrowed behind the eyes, so that the occipital region is not nearly as broad as in *fulva* and without posterior corners. The eyes are distinctly larger, the antennæ decidedly longer, the scapes extending fully $\frac{1}{3}$ of their length beyond the posterior border of the head, the individual joints of the funiculi longer and more slender. The basal teeth of the mandibles are larger and more nearly of the same size as the apical teeth. The epinotum is longer, its spines are short, acute, directed upward and very slightly backward. The postpetiole is more voluminous, compared with the petiole, and its node is more rounded. The head and thorax are opaque and very densely punctate, the clypeus much smoother and more shining than in *fulva*,

the thorax, petiole and postpetiole uniformly and densely punctate and opaque, except the epinotum, which is somewhat rugulose on the sides. The color is uniformly light ferruginous red, with slightly more yellowish gaster and legs. In some specimens the gaster is indistinctly infuscated posteriorly.

The female measures 11–11.5 mm. and is colored like the worker, the wings are yellowish hyaline, with pale yellow veins and brown stigma. They are longer than in *fulva*. The female *texana* differs from the female *fulva* also in the shape of the head, which is narrower behind and therefore more elliptical, the eyes are more convex and the antennæ distinctly longer, though their scapes do not reach so far beyond the posterior borders of the head as in the worker. The clypeus is finely rugulose-punctate and opaque as in *fulva*. The difference in the size of the postpetiole is even greater in the females of the two species.

The male *texana* measures 4–5 mm. and is much paler than the male *fulva*, being reddish brown, with the head dark brown, the mandibles, antennæ and legs light yellow, but the main difference is in the shape of the epinotum. The two protuberances of this region, representing the spines of the worker, are much inflated and bluntly rectangular in profile in *fulva*, whereas in *texana* they are much less swollen and acutely pointed.

I have frequently taken this ant nesting in rather small colonies under stones in shady woods and ravines about Austin and New Braunfels, Texas. A very similar form, but slightly darker in the worker phase and tending towards the variety described below, was collected in the Indian Garden on the Bright Angel Trail in the Grand Cañon, Arizona. Four workers received from Miss Anna Klaumann and taken at Douglas, Kansas (alt. 900 ft.) are indistinguishable from Texan specimens.

39. *Aphænogaster texana* Emery var. *furvescens* var. nov.

Worker. Differing from the typical form only in color, which is reddish brown, with the gaster dark brown, except at the extreme base. In some specimens the head and nodes of the petiole and postpetiole are also distinctly infuscated.

Female (deälated). Length: 7.5 mm.

Like the worker, differing from the female *texana* in color, the body being rich brownish red, the basal half of the gaster, wing-insertions and a broad V-shaped blotch on the head, with its apex on the vertex and its two limbs running forward between the eyes and frontal carinæ, blackish.

Several workers and a single female from two localities in the Huachuca Mts., Arizona, namely Miller Cañon, 5800 ft. (Wheeler) and Ramsay Cañon, same altitude (W. M. Mann).

40. *Aphænogaster texana* Emery var. *carolinensis* var. nov.

Worker. Length: 4-5 mm.

Averaging somewhat smaller than the typical *texana*, with the epinotal spines nearly as long but less erect and directed more backward. The ground color of the body is less red and more brownish, with the dorsal surface of the head, thorax, pedicel and gaster varying from light to dark brown, the base and tip of the gaster paler, antennæ ferruginous, legs yellow; sculpture of the head more pronounced than in *texana*.

Female (deälated). Length: 5.5 mm.

Decidedly smaller than the female *texana*, with narrower clypeal emargination, shorter thorax, and the petiolar node more acute in profile; gaster less voluminous, broadly elliptical. Color much as in the worker.

Described from a single female and numerous workers taken from several small colonies nesting under stones in open woods at Tryon, North Carolina.

41. *Leptothorax eldoradensis* sp. nov.

Worker. Length: 1.8 mm.

Head subrectangular, longer than broad. Mandibles 5-toothed. Clypeus with entire anterior border, which is straight in the middle and not produced, its upper surface impressed in front at the margin. Antennæ 12-jointed; scapes reaching to the posterior corners of the head; funicular joints 2-8 slightly broader than long; two basal joints of club together nearly as long as the terminal joint. Thorax rather short and robust, scarcely longer than the head with the mandibles, decidedly broader in front than behind, with rounded humeri, the sides of the meso- and epinotum subparallel. In profile the dorsal outline is convex in front, straight in the middle and sloping in the epinotal region, both the base and declivity of the latter being subequal and having the same slope; spines reduced to very small, acute teeth, which are shorter than broad at their bases. Petiole from above but little longer than broad, scarcely pedunculate, with straight, subparallel sides; in profile the node is rather high with angular summit, the anterior slope long and distinctly concave, the posterior short and abrupt. Postpetiole small, scarcely half again as broad as the petiole, a little broader in front than behind, convex and subelliptical in outline when seen from above. Gaster elliptical, with straight anterior border. Legs rather slender, the femora and tibiæ feebly clavate.

Head, thorax, pedicel and appendages subopaque, the head slightly shining on the vertex and occiput; gaster smooth and shining. Mandibles rather coarsely striatopunctate; clypeus with three strong median longitudinal carinæ or rugæ and numerous feebler rugæ on the sides. Head, thorax, petiole and postpetiole densely and evenly punctate; head also longitudinally rugulose. Legs and scapes more finely punctate-shagreened.

On the body the hairs are white, erect, obtuse but not clavate, and sparse; on the appendages they are delicate, pointed, appressed and more numerous.

Chestnut brown; gaster paler at the base; mandibles and legs yellowish brown; femora and tibiæ infuscated in the middle.

Described from two workers taken by Dr. J. C. Bradley on the summit of Mt. Wilson, near Pasadena, California. This species may be mistaken for *L. neomexicanus* Wheeler, but it is smaller, the thorax is stouter and of a different shape, the epinotal spines are much shorter, the petiolar node more acute in profile and the postpetiole decidedly smaller.

42. **Leptothorax (Mychothorax) hirticornis formidolosus** subsp. nov.

Worker. Length: 2.5-2.75 mm.

Agreeing with Emery's description of the typical *hirticornis*, except in the following particulars: The spines of the epinotum are not compressed, the petiolar node is scarcely angular but rounded in profile, the color in mature specimens is darker, the body being brownish ferruginous, the upper surface of the head and the gaster, except the extreme base and tip of the latter, dark brown. The legs and antennal scapes are opaque and densely punctate like the thorax. The tips of the mandibles, the clypeus along the middle line and posteriorly and a short median line on the front are shining. The postpetiole is distinctly broader than long, trapezoidal, with its anterior broader than its posterior border and its sides straight. The gaster is regularly elongate elliptical, narrowed in front to its insertion on the postpetiole. Body, including the antennal scapes and legs covered with short clavate hairs as in the typical *hirticornis*.

Female (ergatoid). Length: 2.8 mm.

Closely resembling the worker, except in the structure of the thorax, which has the female arrangement of the sclerites, but is narrow and shows no traces of having borne wings.

Described from five workers and a single ergatoid female taken by Prof. T. D. A. Cockerell on Flagstaff Mt., near Boulder, Colorado. These are evidently distinct from the typical *hirticornis*, but as I have seen no specimens of this form, I am unable to estimate the precise extent of the differences.

43. **Xiphomyrmex spinosus hispidus** subsp. nov.

Worker. Length: 3.5-3.8 mm.

Differing from the worker of *spinosus* Pergande from the cape region of Lower California, in having the erect hairs on the head and thorax short, stiff and blunt, not longer than those on the gaster, and in the shape of the metasternal angle which is large, flat and rectangular in profile and not in the form of a pointed tooth. The hairs on the legs are coarse and suberect. The epinotal spines are distinctly shorter than their distance apart at the base. The posterior border of the head is distinctly excised and there is a faint transverse dorsal impression between the meso- and epinotum. The postpetiole is less than twice as broad as long and about half again as broad as the petiole, its upper surface is rather finely and vermiculately rugose. Only the anterior half of the first gastric segment is subopaque and finely striolate-shagreened. The antennal funiculi are not infuscated at their tips.

Described from a long series of workers which I found nesting in small craters 3-4 inches in diameter in the deserts around Tucson, Arizona (type locality) and five workers from Phoenix in the same state.

44. *Xiphomyrmex spinosus wheeleri* Forel.

Forel described this ant as a distinct species from specimens which I took many years ago in the dry desert at Pacheco, in Zacatecas, Mexico, but a study of three cotypes in my collection shows that it can hardly be more than a subspecies of *spinosus*. As stated by Forel, it differs from *spinosus* in having a distinct mesoëpinotal constriction, in the shape of the metasternal angles which are small and blunt, in the stouter epinotal spines and in having the first gastric segment, except for the scattered piligerous punctures, smooth and shining. The hairs on the legs are oblique, those on the body are pointed, of unequal length, but on the whole decidedly longer than in the preceding subspecies. The clubs of the antennal scapes are infuscated. The head is not more deeply excavated behind than in *hirsutus*, but the upper surface of the petiole is coarsely longitudinally rugose.

I refer two workers which I took in Miller Cañon, Huachuca Mts., Arizona, to this subspecies though their epinotal spines are distinctly smaller and the rugosity of the postpetiole is more irregular than in the Mexican cotypes. The antennal clubs are not infuscated. The Arizona specimens may represent a distinct variety but the material is hardly sufficient to justify the introduction of a new name.

45. *Xiphomyrmex spinosus insons* subsp. nov.

Worker. Length: 3.5-4 mm.

Very similar to the subspecies *wheeleri*, with the epinotal spines long and slightly curved at their tips, the metasternal angles produced into sharp, compressed spines nearly half as long as the epinotal spines, with acute, upturned tips. The postpetiole is twice as broad as long and about $\frac{1}{3}$ as broad again as the petiole, its upper surface coarsely and regularly longitudinally rugose, the gaster smooth and shining, with small, scattered, piligerous punctures. Head very distinctly excised behind; thorax without mesoëpinotal constriction or impression. Erect hairs on the body long and abundant, of unequal length and pointed as in *wheeleri*, those on the legs reclinate. Some specimens show a slight infuscation of the antennal clubs.

Female. Length: 4-4.5 mm.

Closely resembling the worker; pronotum and epinotal declivity transversely, mesonotum, scutellum and pleuræ coarsely, longitudinally rugose. Wings yellowish hyaline, with pale brown veins and darker brown stigma.

Male. Length: 3.5-4 mm.

Head, excluding the mandibles, about as long as broad, with very short cheeks, rounded sides behind the eyes and distinctly excavated posterior border. Mandibles well-developed, with dentate borders. Clypeus convex, with three longitudinal ridges, its anterior border entire. Antennæ 10-jointed; scape as long as the second funicular joint, which is four times as long as the first and longer than joints 3-5 taken together. Thorax rather large, elliptical, broader than the head; mesonotum with distinct Mayrian furrows; epinotum unarmed, feebly convex and steep, without distinct base and declivity. Petiole with a peduncle nearly as long as the rounded node. Postpetiole transverse, about $1\frac{1}{2}$ times as broad as long, rounded above and on the sides. Gaster narrow; legs slender.

Shining; mandibles smooth; head rugose-punctate; thorax and petiole longitudinally rugose, pleuræ and epinotum more opaque, gaster and dorsal surface of petiole smooth and shining.

Hairs yellowish, long and erect, much as in the worker but proportionally longer on the legs.

Black; mandibles and tip of gaster sordid yellow; clypeus, antennæ and legs piceous; tarsi and articulations of legs yellowish. Wings brownish hyaline, with brown veins and stigma.

Described from numerous specimens taken by myself in the following localities:

Texas: Austin (type locality); New Braunfels, Alamito in Brewster County, Alice, San Angelo, Fort Davis, Kenedy, Langtry, Barkdale and Del Rio.

Arizona: Miller Cañon, Huachuca Mts.

This ant nests in small craters in dry, grassy places. There are scarcely more than 70 individuals in a colony. The workers are very timid and forage singly; the winged phases appear during the first week in June.

Subfamily DOLICHODERINÆ.

46. *Dolichoderus* (*Hypoclinea*) *taschenbergi* Mayr var. *aterrimus* nom. nov.

This name is suggested for the var. *gagates* Wheeler as Emery had previously described a *Dolichoderus* (*Monacis*) *gagates* from Pará, Brazil.

47. *Bothriomyrmex* *dimmocki* sp. nov.

Worker. Length: 1.6-1.8 mm.

Closely resembling the Mediterranean *B. meridionalis* but with eyes nearly twice as large and the distance between the eyes and the anterior borders of the head nearly equal to the length of the eyes. The clypeus is proportionally longer and more

convex and slightly sinuate in the middle of its anterior border. Maxillary palpi rather long, 4-jointed as in the European form, but all the funicular joints of the antennæ are distinctly longer than broad. Sculpture of body and pubescence as in *meridionalis* but the color of the head, thorax, coxæ and petiole rather rich brownish red, the gaster dark brown, the mandibles, antennæ and legs dull yellow.

Female. Length: 1.8 mm.

Resembling the worker, except in the structure of the thorax. Eyes scarcely larger than in the worker; ocelli minute. Corners of clypeus distinctly inflated. Mesonotum impressed in the middle behind. Wings hyaline, with pale veins and stigma. The fore wing differs from that of *meridionalis* in lacking the closed discal cell. The color, sculpture and pubescence of the body as in the worker.

Described from two workers, one winged and four dealated females taken by Dr. George Dimmock August 27, 1897, from a single colony on Mt. Tom, near Springfield, Mass.

This insect presents an interesting problem. The seven species of *Bothriomyrmex* hitherto described are all from the Old World, three from the European and African littoral of the Mediterranean, and four from Southern Asia, Java and Australia. The Mediterranean species, as Emery has shown, have 4-jointed, those of Asia and Australia 2-jointed maxillary palpi. The species discovered by Dr. Dimmock agrees with the Mediterranean form in this character but the wings seem to be very different. As nearly as I can make out from the single rather immature specimen of *dimmocki* possessing these organs, the venation is aberrant in lacking the discal cell. This I find to be the case also in a number of male specimens of the Australian *pusillus* Mayr. On receiving the specimens from Dr. Dimmock I doubted the occurrence of a *Bothriomyrmex* in Massachusetts and surmised that there must be some mistake in the label, but he informs me that he certainly took the specimens on Mt. Tom. Then it occurred to me that the form might have been accidentally introduced from abroad, but the species is certainly not one of the seven described forms, six of which I have seen, and the description of *B. walshi* Forel of Bengal, the only one lacking in my collection, does not apply to the Massachusetts specimens. It seems probable therefore that *Bothriomyrmex* is really an indigenous North American genus, but one which is here very rare and on the road to extinction. This conclusion is the more likely since Santschi has shown that the Mediterranean species, at least, are temporary social parasites on *Tapinoma erraticum* after the manner of the species of *Formica* belonging to the *rufa* and *microgyna* groups. The fecundated diminutive queen of *B. meridionalis* and *decapitans* enters the *Tapinoma* nest, and after decapitating the queen of the colony, is adopted by the workers and becomes the mother of the future *Bothriomyrmex* community. We are therefore justified in supposing that *B. dimmocki* behaves in a similar manner towards our

common *Tapinoma sessile*, and if we assume that this ant has almost completely outgrown the toleration of its parasite, we can understand why the latter is so very rare and local that it has never been taken except by Dr. Dimmock.

Subfamily CAMPONOTINÆ.

48. *Polyergus lucidus montivagus* subsp. nov.

Worker. Differing from the typical *lucidus* of the Eastern States in the distinctly paler and more yellowish red color of the body, in not having the gaster infuscated at the tip, in the complete or nearly complete absence of erect hairs on the posterior corners of the head, the smaller number of hairs on the gula and the distinctly less shining surface of the head and thorax.

Female. Colored like the worker and not like the female of *lucidus*, which has the head, thorax and petiole of a striking, dark fuscous red tint. The wings, too, are paler with paler veins and stigma and the surface of the body, especially of the head and thorax, is distinctly less glabrous and shining. Gaster decidedly larger and longer than in *lucidus*.

Male. Differing from the male *lucidus* in the paler wings, which are whitish hyaline, with colorless veins and pale brown stigma, whereas in *lucidus* the wings are faintly brownish, with brown veins and blackish stigma. The border of the petiole seems to be somewhat more acute in profile and the whole node more compressed anteroposteriorly and even more deeply excised than in *lucidus*. The legs, antennal funiculi and gaster in many specimens are paler and more reddish.

Described from numerous specimens of all three phases taken from several colonies in the cañons about Colorado City and Manitou, Colorado. The winged phases were taken July 11 to 15 and August 11 to 20. The slaves in all the colonies belonged to a form of *Formica schaufussi* Mayr near the variety *incerta* Emery, without erect hairs on the gula and petiolar border, but like the typical form in other respects, though somewhat smaller. The specimens of *montivagus* have been compared with large series of the true *lucidus* from many localities in the Eastern States and leave no doubt that the two forms represent distinct geographical races.

49. *Polyergus rufescens breviceps* Emery var. *umbratus* var. nov.

Worker. Length: 6-5.7 mm.

Differing from the typical *breviceps* of Colorado in its somewhat larger size and decidedly darker color, the whole body and appendages being uniformly rich, reddish brown. The head and mandibles are also smoother and more shining than in most specimens of *breviceps*.

Described from numerous individuals taken from a single colony at Brookdale, California, by Prof. Harold Heath. The slave ant accompanying these specimens belongs to a small variety of *Formica fusta* L. near the var. *argentea* Wheeler.

50. *Polyergus rufescens laeviceps* subsp. nov.

Worker. Length: 4-5.5 mm.

Decidedly smaller than the subsp. *breviceps* Emery and of the same size as the subsp. *bicolor* Wasmann, but differing from both in the shorter and more sudden enlargement of the tips of the antennal scapes and in the surface of the body which is much smoother and more shining throughout. The head, especially, is conspicuously glabrous and shining. Pubescence on the thorax and gaster as in *breviceps* and the color is the same, except that the apex of the gaster behind and including the posterior margin of the second segment is black. In many specimens the posterior margin of the first segment is also more or less infuscated.

Described from numerous specimens belonging to two companies of workers which I found making slave raids on the slopes of Mt. Tamalpais, near San Francisco, Cala., July 19, 1914. The ants from whose nest they plundered the brood belonged to *Formica subpolita* Mayr.

51. *Camponotus acutirostris* Wheeler var. *clarigaster* var. nov.

Worker Major. Length nearly 12 mm.

Differing from the typical *acutirostris* in having the gaster reddish yellow throughout like the thorax; the antennal scapes and first funicular joint, tibiae and metatarsal joints black; the mandibles nearly black, the clypeus dark red and the tips of the femora infuscated. From the var. *primipilaris* Wheeler it differs in its smaller size and in lacking the infuscation of the gaster and pronotum.

A single specimen taken at an altitude of about 3000 ft. on the Bright Angel Trail in the Grand Cañon, Arizona. The large number of *acutirostris* specimens which I collected in the Huachuca Mts., Arizona, make it seem possible that this form, and its vars. *primipilaris* and *clarigaster* are merely stature and color varieties of *C. ocreatus* Emery, but till I see unmistakable worker specimens of this ant, I hesitate to regard the specific name *acutirostris* as a synonym.

52. *Camponotus yogi* sp. nov.

Worker Major. Length: 8 mm.

Head rectangular, fully $1\frac{1}{4}$ times as long as broad, with straight, parallel sides and broadly excised posterior border; in profile convex above, obliquely truncated anteriorly and flat below. Eyes rather large, elliptical, well behind the middle of the sides of the head. Mandibles small, thick, wedge-shaped in profile, their outer

borders convex, their apical borders with five subequal teeth. Clypeus flat, entirely ecarinate, $1\frac{1}{2}$ times as long as broad, as broad behind as in front, slightly broader in the middle. Frontal carinae strongly diverging in front, approximated and parallel behind. Frontal area indistinct. Antennae slender; scapes curved and slightly flattened at the base, scarcely enlarged at their tips, which reach to the posterior corners of the head. Thorax short, not longer than the head, broadest through the pronotum which is about $\frac{2}{3}$ as broad as the head, narrowed and laterally compressed behind, in profile evenly arcuate above, with strong promesonotal and mesoepinotal sutures; base and declivity of epinotum distinct, the former slightly convex, shorter than the latter, which is abruptly sloping and distinctly concave. Petiole very much compressed anteroposteriorly, with sharp, broadly rounded and entire superior border, the anterior and posterior surfaces very feebly convex. Gaster narrow, nearly as long as the head and thorax together, with parallel sides. Legs moderately long; fore femora somewhat incrassated.

Head behind the eyes, thorax, petiole, gaster and legs shining, smooth, with very fine, sparse and indistinct punctures. Mandibles slightly shining, coarsely and rather densely striatopunctate; clypeus and anterior half of head opaque, densely punctate and covered with coarse, slightly elongate foveolae. Front with several round foveolae; vertex punctate. Antennal scapes slightly shining, finely punctate.

Hairs yellowish, slender, sparse, rather short and erect on the body and upper and posterior portion of the head, shorter on the mandibles, very short and obtuse on the clypeus, and sculptured portions of the head where they arise from the elongate foveolae. Legs with very short appressed hairs except at the knees where they are longer and erect.

Head, petiole, epinotum, mesonotum, gaster and scapes castaneous; pronotum, funiculi and legs paler and more yellowish red or testaceous.

Worker Minor. Length: 4 mm.

Head small, but little longer than broad, rounded behind, a little broader behind than in front, evenly convex above, not truncated anteriorly. Clypeus subcarinate, nearly as broad as long. Mandibles rather narrow. Antennal scapes reaching fully $\frac{2}{3}$ their length beyond the posterior border of the head. Thorax and petiole shaped much as in the worker major, but the former proportionally higher through the mesonotum. Gaster less elongate, elliptical.

Mandibles finely striatopunctate, glossy; whole head smooth and shining, like the remainder of the body, not sculptured anteriorly.

Hairs white, delicate, sparse and rather short, not modified on the anterior portion of the head.

Color like that of the worker major, except that the scapes as well as the funiculi of the antennae are colored like the legs and mandibles and the head is also testaceous in front and castaneous only on the vertex and occiput.

Described from single major and minor workers taken by Mr. Percy Leonard from a hollow twig of manzanita near the Raja Yogi Institute on Point Loma, near San Diego, Cal. This species is unlike any of our other North American *Camponoti*. It clearly approaches the species of *Colobopsis* and should, perhaps, be included in that subgenus, though the peculiar truncated anterior portion of the head is not circular nor distinctly marginate as in such forms as *C. truncatus* Spinola, *impressus* Roger, *abditus* Forel and *pylartus* Wheeler.