TABLE 8

Activity of Reproductives of:

Locality	Date	Activity
M. ewarti Snelling		
CALIF., 3 mi W Shaver's Well	1 Mar. 1964	♂♂, ♀♀ in nest
CALIF., Deception Cyn.	26 Jan. 1967	♀♀ in nest
M. navajo Wheeler		
COLO., La Junta	23 July 1950	♂♂ in nest
TEX., Van Horn	10 July 1950	♀♀ at light
UTAH, 9 mi E Trout Creek	17 Aug. 1933	♂♂, ♀♀ in nest
ARIZ., 4 mi N Prescott	18 July 1971	♀ at light
ARIZ., Texas Pass	19 July 1917	♀♀ in nest
ARIZ., Texas Pass	20 July 1917	♂♂ in nest
ARIZ., Tucson	21 July 1916	♀ (flight?)
ARIZ., Hereford	18 July 1958	♀ at light
CALIF., 4 mi W Scissors Cross	4 Aug. 1974	♀♀ at light after rain
M. pyramicus M. Smith		
IDA., Hammett	10 Apr. 1932	♂♂, ♀♀ in nest
IDA., 5 mi E Arco	15 June 1967	♀♀ in nest
IDA., Twin Falls	4 Oct. 1932	♂♂, ♀♀ in nest
ORE., 39 mi W Jordan Valley	20 June 1967	♀♀ in nest
NEV., 5 mi W Mullen Gap	27 Sept. 1966	♂♂ in nest

and California. Many, however, cannot be assigned to one or the other. Since both extremes, as well as the intermediates, may be present in the same nest sample, it is safe to assume that we are dealing with a single, variable species. This reduction in vestiture in western samples parallels the situation in the related *mexicanus*.

Pyramicus Group

Myrmecocystus (Myrmecocystus) ewarti Snelling

Figures 290–298, 326, 327, 338, 339

Myrmecocystus ewarti Snelling 1971. Contr. Sci., L.A. Co. Mus. 214:2–6. ♀♀♂; Wheeler and Wheeler 1973. Ants of Deep Canyon, 120, Fig. 42.

Diagnosis. Worker. Few or no erect hairs on malar area, scape and tibiae (except beneath); propodeum, at juncture of dorsal and posterior faces, angularly produced upward; petiolar scale compressed; erect pronotal hairs present, at least a pair exceeding apical breadth of scape. *Female.* Penultimate maxillary palpal segment narrowed basally and apically; tibiae without erect hairs; OOD 3 × OD; first tergum with erect discal hairs; mesoscutum, between parapsides, with abundant fine piligerous punctures and scattered coarse punctures. *Male.* Forewing with fringe hairs on apical margin; scape and tibiae without erect hairs.

WORKER. *Measurements.* HL 0.76–1.30 (1.23); HW 0.70–1.30 (1.23); SL 0.93–1.36 (1.36); WL 1.10–1.80 (1.70); PW 0.46–0.83 (0.83).

Head: Shape varying from longer than broad in most workers to slightly broader than long in largest workers, CI 88–104 (100); a little shorter than scape, SI 102–136 (110). In frontal view head broadest at lower margin of eyes, sides slightly convex to straight, narrowed toward mandibular insertions. Occiput, in frontal view, somewhat flattened in middle, sides convex, not at all angulate. Eye large, 1.5 × first flagellomere; OMD 0.90–1.15 (0.93) × EL. Mandible with seven distinct teeth, often with a small intercalary denticle between the penultimate and basal teeth.

Thorax: Slender to moderately robust, PW 0.37–0.50 (0.48) × WL. Basal face of propodeum pyramidally produced upward at juncture with posterior face, about half as long as posterior face.

Petiole: Compressed when viewed in profile, crest thin, weakly angularly excised in middle; in dorsal view twice as wide as long.

Vestiture: Erect hairs sparse on head, confined to clypeus, frontal lobes and occipital areas. Erect pronotal pilosity sparse, but with at least a pair of fine, fully erect hairs which are about as long as apical width of scape; mesonotum with 3–6 erect hairs; propodeum without erect hairs at summit of declivity, or with one or two which are less than half as long as those of mesonotum. Petiolar scale with a few very short, inconspicuous erect hairs on crest. Disc of first tergum with scattered, short, fully erect blunt hairs; second and succeeding terga with progressively longer discal hairs. Tibiae with very sparse, fine, decumbent to subdecumbent hairs on outer surfaces, these shorter and finer than the row of gradated bristles on the inner surface.

Pubescence very fine, sparse on head, a little more abundant on occiput, especially behind eyes; thoracic pubescence denser than cephalic, but not obscuring surface, denser on sides of propodeum than elsewhere. First three terga with dense, fine pubescence which does not obscure surface, fourth and fifth with very sparse pubescence.

Integument: Dull, everywhere very finely shagreened, with conspicuous round sparse punctures on clypeus, malar area more densely shagreened, with scattered elongate punctures; frontal lobes with scattered micropunctures.

Color: Light brownish yellow, legs and gaster more yellowish; mandibular margins somewhat ferruginous.

FEMALE. *Measurements.* HL 1.47; HW 1.63; SL 1.42; EL 0.57; OMD 0.52; WL 3.6; PW 1.89.

Head: Broader than long, CI 111; longer than scape, SI 87. In frontal view head broadest behind eyes, sides converging slightly toward mandibular insertions. Occiput, in frontal view flat, with well-rounded corners. Eye large, 1.8 × first flagellomere; OMD 0.91 × EL; IOD 3.0 × OD. Penultimate segment of maxillary palp broadest in middle, narrowed basally and apically.

Thorax: Robust, PW 0.52 × WL. In profile posterior two-thirds of mesoscutum and anterior half of scutellum on same plane; metanotum not protruding.

Petiole: In profile, compressed, crest sharp; in anterior view, distinctly notched; from above, about three times wider than long (not clearly visible in only available specimen).

Vestiture: Erect cephalic pilosity as described for worker; pronotum with a few erect hairs along anterior margin; mesoscutum and scutellum with scattered long, erect yellowish hairs arising from coarse punctures; pleura with about a dozen long, erect yellowish hairs; propodeum without conspicuous erect hairs; first tergum with scattered subdecumbent to erect yellowish hairs on disc; second and following terga with fully erect yellowish hairs longer, a little more abundant; inner face of fore femur without conspicuous fully erect hairs, though 15+ are present on ventral surface; middle and hind tibiae with numerous decumbent, fine yellowish hairs.

Pubescence long, yellowish, appressed to decumbent on head, thorax and appendages; fully appressed and abundant on first three terga, conspicuously sparser on fourth.

Integument: Clypeus sparsely punctate in middle, interspaces smooth and shiny, becoming more closely punctate and with shagreened interspaces toward lateral lobes; frontal lobes shiny, closely micropunctate; front of head shiny, with abundant micropunctures and scattered coarse punctures; occiput dull, densely micropunctate and with sparse coarse punctures; malar area dull, surface lightly shagreened, with abundant micropunctures and numerous coarse punctures, latter becoming ovoid near eye.

Pronotum slightly shiny, densely micropunctate. Parapsis shiny, with abundant micropunctures and sparse coarse punctures; mesoscutal disc shiny, with sparse micropunctures and scattered coarse punctures, with irregular, nearly impunctate area in middle. Scutellum shiny, with scattered micropunctures and a few coarse punctures. Anepisternum shiny, sparsely micropunctate and with scattered coarse punctures; katepisternum similar but punctures slightly finer and a little denser. Propodeum densely shagreened and densely micropunctate.

First three terga shiny, closely micropunctate, punctures coarsest and densest on first, becoming progressively finer and sparser on second and third segments.

Color: Body yellow, dorsum of head and thorax slightly brownish; appendages paler yellow. Wings clear, veins and stigma light yellow.

MALE. *Measurements.* HL 0.66–0.76; HW 0.63; SL 0.73–0.76; EI 0.33; OMD 0.16; WI 1.33–1.43; PW 0.83–1.00.

Head: Margins slightly convergent toward mandibular insertions; head a little longer than broad, CI 90–95; a little shorter than scape, SI 115–121; OMD 0.50 × EL; anterior ocellus little smaller than lateral ocelli; IOD 3.0–3.5 × OD; OOD 1.0–1.5 × OD. Mandible with preapical tooth or preapical notch before apical tooth. Clypeus with or without obscure preapical transverse depression.

Petiole: In profile, distinctly higher than long, sharply cuneate; in frontal view, sides convergent toward narrow, flat, medially notched crest; in dorsal view, about twice as wide as long.

Vestiture: Erect hairs yellowish, sparse on head and thorax, longest on scutellum, where they are about equal to MOD; propodeum without conspicuous erect hairs; tibiae and scape without erect hairs. First two terga with sparse, short erect hairs, third and following segments with conspicuous long, scattered hairs.

Pubescence sparse and inconspicuous on head and thorax, conspicuously denser on propodeum above and on first two terga. Forewing with conspicuous fringe hairs from stigma to apex, around apical margin to vein Cu-A; apical and posterior margins of hind wing fringed.

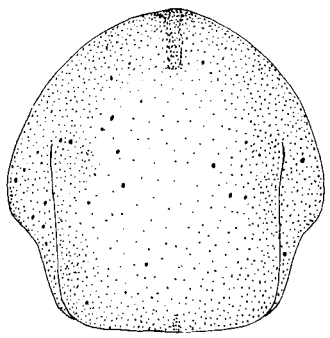
Integument: Moderately shiny, with piligerous micropunctures, a few scattered coarse punctures on scutum and mesopleura.

Color: Uniformly brownish, appendages yellow to yellowish brown. Wings whitish hyaline, stigma and veins pale yellowish.

Terminalia: Figures 327, 338, 339.

Type Material. 3 mi W Shaver's Well, Riverside Co., CALIF., 1 & 8 March 1964 (R. R. Snelling). Holotype, allotype and most paratypes in LACM; additional paratypes in AMNH, GCW, MCZ, MNHG, USNM.

Distribution. Mojave and Colorado Deserts of southern California, probably also in adjacent south-



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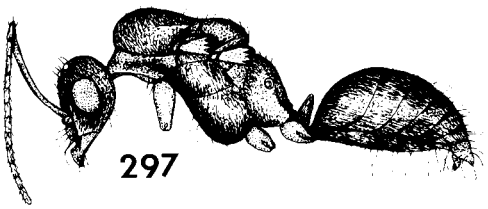

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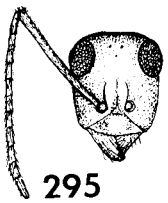

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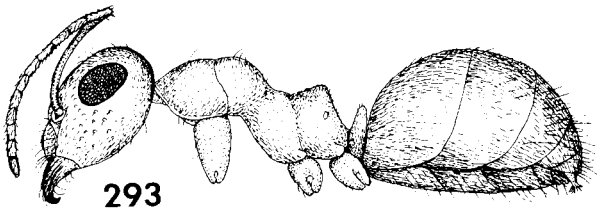

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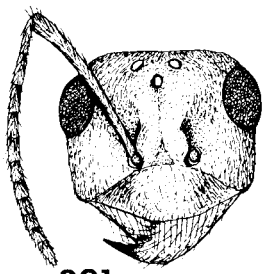

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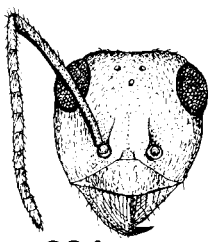

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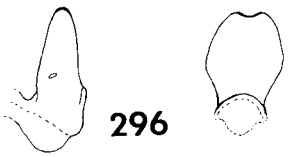

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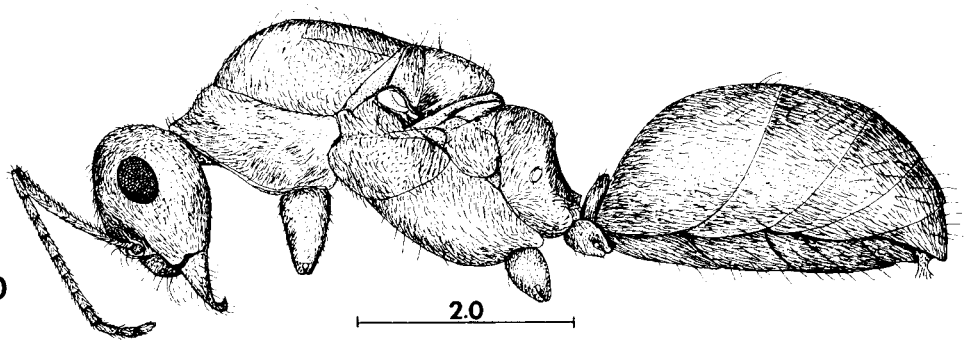

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FIGURES 290–298. *M. ewarti*. 290, female, lateral view; 291, head of female, frontal view; 292, mesoscutum of female, distribution of punctures; 293, major worker, lateral view; 294, head of major worker, frontal view; 295, head of minor worker, frontal view; 296, petiole of major worker, lateral (left) and posterior (right) views; 297, male, lateral view; 298, head of male, frontal view.

western Arizona, northwestern Sonora and northern Baja California (Fig. 372).

Localities. UNITED STATES. California: Imperial Co.: 6 mi E Glamis, 925′, 30 Mar. 1967 (R. R. Snelling; LACM). *Riverside Co.,* Deep Canyon, 800′–975′, various dates (G. C. & J. Wheeler; GCW); 1.5 mi N Thousand Palms, 190′, 5 Feb. 1967 (R. R. Snelling, LACM); Deception Cyn. and Fan Hill, Joshua Tree Natl. Mon., 26 Jan. 1967 (R. J. Hamton; RJH); Carrizo Creek Cyn., San Jacinto Mts., 1100′, 27 Feb. 1963 (M. Ewart; LACM). *San Bernardino Co.:* 23 mi S Needles, 475′, 31 Jan. 1967 (R. R. Snelling; LACM); 44 mi E Twentynine Palms, 2 Oct. 1963 (R. R. Snelling; LACM).

Ecology. The type series was found nesting in a sandy stream bed in Creosote Bush-Bur Sage Desert. The entrance was surrounded by a large crateriform tumulus of fine sand particles. Known habitats range from Creosote Bush and Palo Verde-Cactus Shrub Deserts to Piñon-Juniper Woodland, with most records from Creosote Bush and Creosote Bush-Bur Sage Deserts. The elevational range is from 190′ near Thousand Palms to 1100′ at Carrizo Creek Canyon, both in Riverside County.

Foraging activity is nocturnal; workers gather nectar from plants and solicit aphids. They have also been observed to bring in remnants of dead arthropods. Repletes were found in the type series nest.

The activities of the sexual forms are unknown. Presumably the mating flight takes place at night, most likely following a rain. The sexual forms have been found in the nests during the early spring months (Table 8).

Discussion. Present data indicate that this species replaces the similar *pyramicus* in southern California on the Mojave and Colorado Deserts. It is probably to be found also in adjacent portions of Arizona, Sonora and Baja California.

The workers of *ewarti* may be separated from those of *pyramicus* by the presence of a number of erect hairs on the pronotum and first tergum. A pair of pronotal hairs, which seems always to be present in *ewarti,* is as long as or longer than the apical breadth of the scape. Although occasional specimens of *pyramicus* may have one or two erect pronotal hairs, they are always much shorter. Erect hairs are present on the hind tibia of *pyramicus* but absent in *ewarti*. The median area of the clypeus of *ewarti* has four or more long, erect hairs; in *pyramicus* clypeal hairs are confined to the margins.

The single female available of *ewarti* is very similar to those of *pyramicus* but has a number of erect hairs on the clypeal disc, the antennal scape possesses numerous fine suberect hairs, long erect hairs are abundant on the outer face of the fore femur and there are erect hairs on the hind tibia. The malar area of *ewarti* is less sharply shagreened, the punctures below the eyes are larger and are round (clearly elongate in *pyramicus*). The best character to separate the females of these species seems to be that of mesoscutal punctation. The discal area in *ewarti* is rather uniformly finely, sparsely piligerously punctate. There are, in addition, a number of much coarser, setigerous punctures scattered over the disc. The piligerous punctures of the parapsis are little coarser than those of the median area, and are mostly separated by two or more times a puncture diameter. In *pyramicus,* the center of the mesoscutum is virtually impunctate, the setigerous punctures are fewer and less conspicuous, and the punctures of the parapsis are much coarser than those of the median area, and are mostly separated by a puncture diameter or less.

The males are very similar and, until more specimens of *pyramicus* are available, the differences noted here must be considered provisional. In size, *pyramicus* males are conspicuously longer; head length of males of this species exceeds 0.90 mm, while that of *ewarti* is less than 0.80 mm. However, *Myrmecocystus* males vary greatly in size within a single colony, so the size difference must be considered with this variability in mind. The lower margin of the fore femur of *ewarti* has a number of long, erect hairs as well as many extremely fine, short ones. The few males seen of *pyramicus* possess, in addition, about as many long hairs and an equal, or greater, number of hairs about half as long as the longer. The most conspicuous difference is the presence of a discoidal cell in *ewarti* males and its lack of those of *pyramicus*. Finally, *ewarti* males have a well developed fringe of hairs on the apical margin of the fore wing and apical and posterior margins of the hind wing. There is no fringe on the forewing of *pyramicus* and on the hind wing it is extremely sparse, most of the hairs separated by much more than their own lengths.

Myrmecocystus (Myrmecocystus) pyramicus M. Smith

Figures 299–307, 324, 325, 336, 337

Myrmecocystus mexicanus subsp. *navajo,* Cole 1934. Ann. Entomol. Soc. Amer. 27:402. *(misidentification)*

Myrmecocystus pyramicus M. Smith 1951. Great Basin Nat. 11:91–94. ♀. Cole 1957. Jour. N.Y. Entomol. Soc. 65:129–130. ♀♂.

Diagnosis. Worker: Few or no erect hairs on malar area, antennal scape and tibiae (except beneath); propodeum, at juncture of dorsal and posterior faces, angularly produced upward; petiolar scale compressed; erect pronotal hairs, when present, shorter than apical breadth of scape. *Female.* Penultimate maxillary palpal segment narrowed basally and apically; tibiae without erect hairs; OOD 3 × OD; first tergum without erect discal hairs; mesoscutum, between parapsides, with scattered coarse and fine punctures. *Male.* Forewing