here referred to *mimicus* and females and workers of *romainei*. I have seen none of the six males mentioned by Wheeler as part of the type series; the brief description of that caste would apply equally well to either species.

In selecting a Lectotype for this species I have been guided by expediency. The use of this name has been more or less uniformly applied since 1908. In 1950 Creighton placed var. *jesuita* and *melliger* subsp. *lomaensis* in synonymy with *mimicus*. I have chosen as Lectotype, therefore, a specimen which supports these interpretations. The alternative would have been to transfer the name to a wholly different species (*romainei* of this revision) and to resurrect *jesuita* for the species long known as *mimicus*. The former choice is least confusing.

The synonymy of *jesuita* was adequately discussed by Creighton. It is sufficient here merely to state that *jesuita* is the same as *mimicus* in the sense of the present study. When Wheeler (1912) described *lomaensis* he treated it as a subspecies of *melliger*. The characteristics by which it was to be separated from *mimicus*, also regarded as a subspecies of *melliger*, will not hold, as correctly noted by Creighton. However, it should be observed that there are differences between the California form and that of New Mexico and Texas. In both males and females of the eastern populations, the hairs of the mesopleura are uniformly quite short and well separated. The mesopleural hairs in the California populations are variable in length, many hairs up to 0.23 mm long, about twice the length seen in specimens from New Mexico and Texas.

Also noticeable in the sexual forms is relatively smaller eye size. Among the western females the malar area is 1.50–1.58 × the EL; in females from Arizona and New Mexico, the range is 1.10–1.43. A similar situation exists among the males studied: 0.78–0.84 in those from California, 0.70–0.75 in those from eastern parts of the range.

The population differences noted are not confined to the males and females, but they are more obvious in these castes. Western workers *(lomaensis)* do differ from their eastern counterparts. In these, the frontal lobes are more extensively and more abundantly punctate; the punctures extend well up onto the frons and they are mostly separated by two puncture diameters or less. In specimens from New Mexico and Texas the punctures do not extend onto the frons and the intervals between punctures are three to six times a puncture diameter. There is also a tendency among larger workers, in some California samples, to possess more abundant pubescence on the third tergum than is normal. Some samples from the area around Rodeo, New Mexico, are similar.

These differences are interesting, but difficult to interpret. They may represent another example of character displacement. In this case the species displacing against *mimicus* may be the closely related, and broadly sympatric, *depilis*. Over the broad area of sympatry, from southern Arizona to western Texas, both sexes of *depilis* are recognizable from those of *mimicus* by the much longer pleural hairs, up to 0.25 mm long in the females.

It is also possible that the western populations may represent a very closely related species, or, less likely, a subspecies. Before any conclusion can be reached, much additional material, with particular emphasis on the sexual forms, will have to be studied. Such material is not now available.

Kennedyi Group

Myrmecocystus (Endiodioctes) kathjuli new species

Figures 92–99, 160, 172, 185, 193

Diagnosis: Worker: Malar area with few erect hairs; pronotal hairs short, stiff; third tergum with abundant appressed pubescence; gaster black, but with mediobasal yellow blotches on first and second terga; CI usually (over 80%) less than 90; mandible octodentate. *Female:* penultimate segment of maxillary palp more than twice as wide in basal third as at apex; malar area with numerous very long, flexuous hairs; gaster ferruginous; thorax black with extensive ferruginous markings. *Male:* Ventral lobe of aedeagus convex in profile; mesoscutum uniformly tessellate, moderately shiny; petiolar node sharply cuneate, crest, from front, deeply incised; first three terga with abundant pubescence in middle; longest occipital hairs at least 0.75 × MOD; wings without fringe hairs; some mesoscutal hairs exceeding EL.

WORKER. *Measurements.* HL 0.95–1.23 (1.23); HW 0.77–1.17 (1.17); SL 1.17–1.53 (1.53); WL 1.5–2.2 (2.2); PW 0.60–0.90 (0.90).

Head: Distinctly longer than broad in all sizes, CI 82–95 (95) much less than SL, SI 115–132 (124); in frontal view, broadest below level of eyes, sides straight or very slightly convex, hardly narrowed toward mandibular insertions. Occiput, in frontal view, slightly convex, evenly rounded into sides through barely perceptible corners. Eye small, 0.98–1.00 (1.00) × first flagellomere; OMD 1.53–1.89 (1.89) × EL. Mandible with eight teeth.

Thorax: Slender, PW 0.36–0.44 (0.41) × WL. Mesonotum evenly sloping to metanotum. Propodeum higher than long; in profile, wholly convex from base to apex, without defined basal and posterior faces.

Petiole: In profile, broadly cuneate, with rounded crest; from behind, crest flat or gently convex, without median notch.

Vestiture: Cephalic pubescence reduced, sufficiently dense to impart a sheen only on occiput; pubescence moderately dense on thorax and first three terga.

Malar area with six or fewer fine erect hairs; longest occipital hairs little shorter than EL, much exceeding MOD. Pronotum with about 8–12 erect hairs, longest equal to about 0.5 × MOD; mesonotum with about twelve erect hairs, longest less than 0.5 × MOD; propodeum with about an equal number of similar hairs. Crest and sides of petiolar scale with a few fine erect hairs. First three terga with discal hairs sparse, shorter than apical thickness of hind tibia, hairs longer on margins, on succeeding segments and on sterna. Short, erect hairs numerous on anterior and lateral scape surfaces, all surfaces of femora (except inner face of fore femur) and exterior surface of tibiae.

Integument: Head polished and shiny, with scattered fine punctures, coarser and denser on frontal lobes; mandible finely striate and with scattered coarse punctures. Thoracic dorsum moderately shiny, lightly shagreened, sides and propodeum duller, more densely shagreened. Terga slightly shiny, densely shagreened and closely micropunctate.

Color: Head, thorax and appendages clear light ferruginous; gaster blackish brown, first two or three terga with large, yellowish, median blotches.

FEMALE. *Measurements.* HL 1.90–2.00; HW 1.90–2.10; SL 1.17–1.53; WL 1.5–2.2; PW 0.60–0.90.

Head: As broad as long or broader, CI 100–105, slightly longer than scape, SI 95. In frontal view, broadest at level of antennal socket, then convergent toward mandibular insertion. Occiput, in frontal view, gently convex, lateral corners broadly rounded. Eye small, about 1.2 × length of first flagellomere; OMD 1.55–1.75 × EL. OOD 3.0–3.7 × OD; IOD 2.5–2.7 × OD. Mandible with ten or eleven teeth. Penultimate segment of maxillary palp much narrowed apicad, more than twice broader in basal third as at apex.

Thorax: Robust, PW 0.57–0.62 × WL. Posterior half of scutum and anterior half of scutellum forming an even, flattened plane. Basal face of propodeum distinct, sloping toward posterior face which it meets in a weakly defined angle.

Petiole: Compressed in profile, apex very narrowly truncate; in frontal view, crest deeply, angularly incised.

Vestiture: Pubescence sparse over most of head, longer, denser on occiput and malar area, generally appressed, but some on occiput decumbent. Thoracic pubescence dense on pronotum, sides and propodeum, sparse on scutum (but denser on parapsis) and scutellum. First five terga with dense appressed pubescence.

Side of head, in frontal view, with numerous long, flexuous, fully erect, hairs; occipital hairs erect, slender, flexuous, many exceeding EL. Mesoscutum with sparse, fully erect hairs, some of which nearly equal EL; scutellum with some much longer hairs. Pleura with scattered long, erect hairs. Propodeum with numerous erect hairs on basal and lateral faces, longest exceeding EL. Petiole with numerous shorter erect hairs on sides and crest. Terga with sparse erect discal hairs, progressively longer on succeeding segments, those on first segment about equal to apical thickness of hind tibia. Scape with sparse erect hairs on all except posterior face, and abundant subdecumbent to erect, shorter and finer pubescence. Fore femur with numerous erect hairs on posterior and ventral surfaces, with abundant subdecumbent to erect pubescence on anterior and extensor surfaces; mid and hind femora with mixed decumbent to erect pubescence and pilosity; mid and hind tibiae with abundant mixed decumbent to erect pubescence and pilosity, but mostly appressed on flexor surfaces. Wings without fringe hairs.

Integument: Clypeus slightly shiny, integument roughened between coarse, scattered punctures. Front of head shinier, lightly shagreened, with abundant fine punctures, denser and closer on frontal lobes. Broad median area of scutum lightly shagreened and shiny, with scattered fine punctures; nearer parapsidal lines more coarsely punctate, punctures separated by about twice a puncture diameter; parapsis with punctures a little coarser, subcontiguous. Scutellum sparsely punctate in middle, lightly shagreened and shiny. Pleura duller, closely shagreened and with scattered coarse punctures. First tergum lightly shagreened and moderately shiny at summit, with scattered coarse punctures and more numerous but sparse micropunctures. Second and remaining terga duller, shagreened and densely micropunctate.

Color: Head, appendages and gaster ferruginous; occipital area, narrow apical margins of first four terga and sterna and most of fifth segments, brownish. Thorax blackish brown, with pronotum and scutellum mostly ferruginous and with ferruginous blotches posteromedially on scutum and on pleura and propodeum. Wings clear, subcostal vein dark brownish, remaining veins and stigma light brownish.

MALE. *Measurements.* HL 0.83–0.90 (0.90); HW 0.80–0.87 (0.87); SL 0.97–1.07 (1.00); EL 0.28–0.30 (0.30); WL 2.1–2.5 (2.2); PW 1.3–1.5 (1.4).

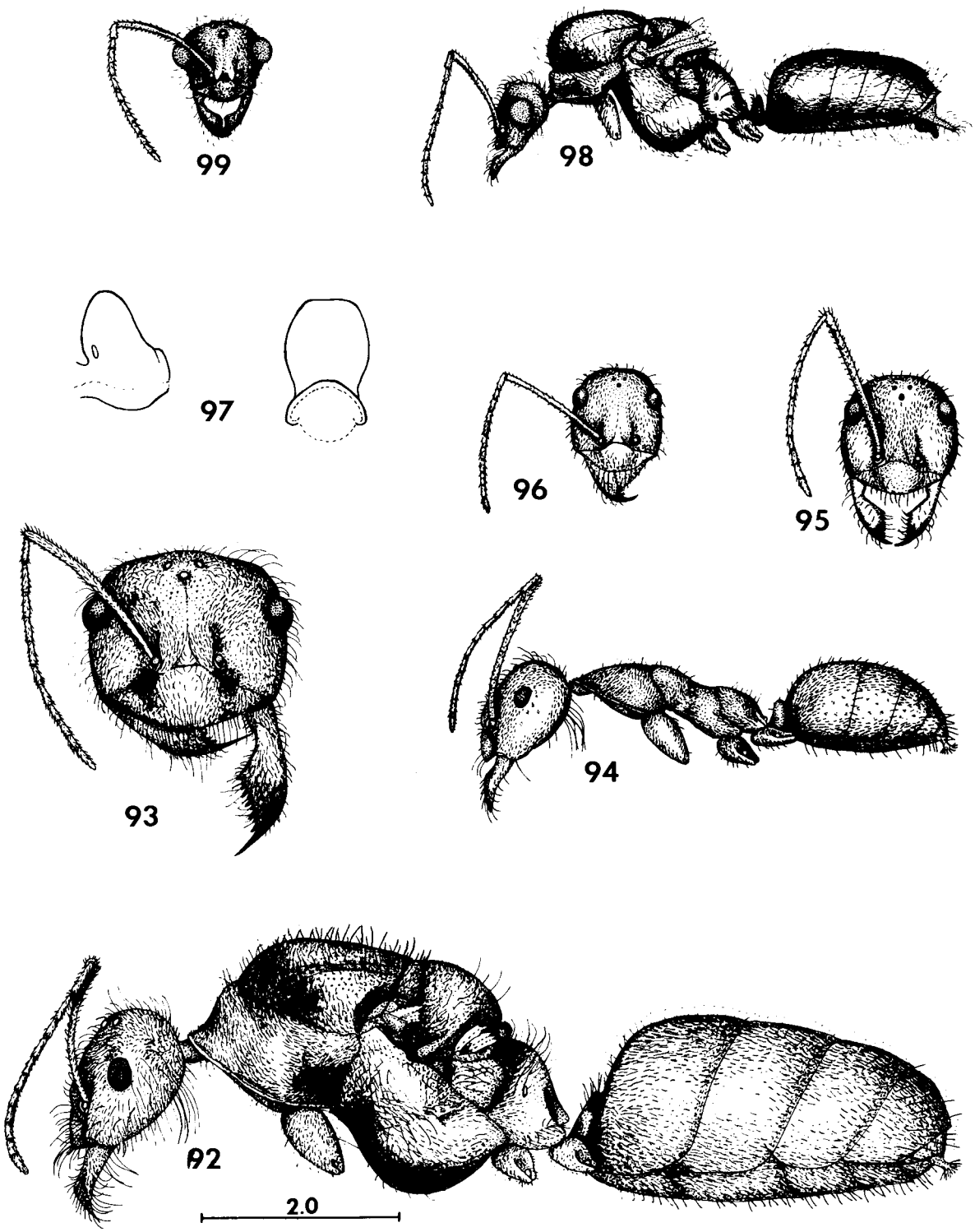
Head: A little longer than broad, CI 93–97 (95); distinctly shorter than scape, SI 111–124 (111); in frontal view, sides straight or slightly concave, slightly convergent toward mandibular insertions; occiput broadly convex and with poorly indicated lateral angles. OMD 0.78–0.89 (0.78) × EL; OOD 2.0–3.2 (3.0) × OD; IOD 2.2–3.2 (2.2) × OD. Mandible without preapical notch, cutting margin edentate or with minute denticle near basal angle (one specimen).

Thorax: Robust, PW 0.59–0.67 (0.64) × WL. Propodeum without basal face.

Petiole: Cuneate in profile, apex sharp; in frontal view, crest broadly, angularly incised.

Vestiture: Pubescence scattered on head and thorax, sufficiently dense on first three terga to form sheen.

Cephalic pilosity long, flexuous, about six hairs on each malar area; longest occipital hairs exceeding EL. Mesoscutal hairs numerous, some about equal to EL;



FIGURES 92–99. *M. kathjuli*. 92, female, lateral view; 93, head of female, frontal view; 94, major worker, lateral view; 95, head of major worker, frontal view; 96, head of minor worker, frontal view; 97, petiole of major worker, lateral (left) and posterior (right) views; 98, male, lateral view; 99, head of male, frontal view.

scutellum with much sparser, but longer, hairs; pleural hairs sparse, some longer than EL; propodeum with sparse hairs on sides and basal half, shorter than those of pleura. Petiole with short erect hairs on sides and crest. Gaster with sparse long, slender hairs. Front of scape with decumbent to erect hairs; remaining surfaces with decumbent to erect pubescence and scattered hairs. Femora with suberect to erect hairs on all surfaces; tibiae with numerous suberect to erect hairs externally, with scattered suberect to erect hairs and abundant decumbent to suberect pubescence on remaining surfaces. Wings without fringe hairs.

Integument: Head moderately shiny, lightly shagreened, with very sparse micropunctures and scattered coarse punctures. Malar area duller, more coarsely and closely shagreened and with a few very coarse, elongate, setigerous punctures. Occiput duller, with numerous, but still sparse, micropunctures. Mesoscutum moderately shiny, sharply shagreened and with scattered coarse punctures. Scutellum shinier, less sharply shagreened, with scattered coarse punctures. Mesopleura slightly shiny, densely and sharply shagreened, with sparse coarse punctures. Propodeum slightly shiny, uniformly shagreened, sparsely, coarsely punctate. Summit of first tergum moderately shiny, sparsely micropunctate; second and third terga duller, more distinctly shagreened and closely micropunctate.

Color: Blackish, antennae and legs medium brown. Wings clear, veins and stigma light brownish, subcostal vein darker.

Terminalia: Figures 172, 185, 193.

Type Material. Holotype worker, allotype male; one female, 94 worker and five male paratypes: Big Rock Wash, 2770′, near Palmdale Blvd., Los Angeles Co., CALIF., 31 Mar. 1972 (J. P. & K. E. Donahue) in LACM. Three worker paratypes in each of the following: AMNH, MCZ, USNM and private collections of GCW, REG.

Etymology. The specific name is compounded from the first four letters of the names of the collectors of the type series, Katherine and Julian Donahue, to whom this species is dedicated.

Distribution. Known at present only from the western Mojave Desert of California (Fig. 365).

Localities. UNITED STATES. California: Kern Co.: Red Rock Cyn., 1 May 1971 (R. J. Hampton; LACM, RJH); Short Cyn., 3500′, 3 Nov. 1967 (R. R. Snelling, No. 67–272; LACM); *Los Angeles Co.:* Lancaster, 2355′, 17 Aug. 1954 (R. R. Snelling; LACM).

Ecology. The few records of this ant are all from Creosote bush desert where Joshua trees *(Yucca brevifolia)* are present. Known elevational amplitude is a little over 1000 feet, extending from 2355–3500′. Nests are constructed in desert washes in deep sand and are surmounted by a low broad crateriform tumulus up to 17 cm in diameter. Foraging is diurnal, and the workers have been collected at floral nectaries. The sexual forms were present in the type series nest on 31 Mar. 1972 and a dealate female was taken on the ground at Red Rock Canyon on 1 May 1971.

Discussion. This species is most similar to such species as *nequazcatl, wheeleri* and *kennedyi.* The characteristics of the female are very similar to those of *wheeleri,* the only other species with a ferruginous gaster in this caste. The female of *wheeleri* is more extensively ferruginous on the thorax than that of *kathjuli,* but this is probably subject to too much variation to be useful. At present only the much longer cephalic and thoracic pilosity of *kathjuli* will separate the females of these species.

The shorter pronotal hairs will distinguish the worker of *kathjuli* from those of *nequazcatl* and *wheeleri;* the bicolored gaster will separate it from these and *kennedyi.* From *kennedyi,* which also has short pronotal hairs, further distinction lies in the consistently broader head of *kennedyi,* CI in excess of 90 in 88% of the specimens studied. No other species in this complex has eight-toothed mandibles.

Pale workers of *flaviceps* resemble this species but are recognized by the more abundant cephalic and thoracic pubescence, hence duller appearance, and broader head, in which CI exceeds 90 in more than 80% of the specimens studied. Also, the range of *flaviceps* in the Mojave Desert lies to the east of that of *kathjuli.*

Myrmecocystus (Endiodioctes) kennedyi Cole

Figures 100–108, 161, 173, 184, 192

Myrmecocystus melliger subsp. *semirufus,* Wheeler 1908. Bull. Amer. Mus. Nat. Hist. 24:355 *(part);* Wheeler 1912. Psyche 19:174 *(part);* Cole 1932. Ohio Jour. Sci. 31:536; Cole 1934. Ann. Entomol. Soc. Amer. 27:392, 402; Cole 1934. Entomol. News 45:100; Cole 1937. *Ibid.,* 48:138; Cole 1938. Amer. Midl. Nat. 20:371; Mallis 1941. So. Calif. Acad. Sci. 40: 20; Cole 1942. Amer. Midl. Nat. 28:386. *(all misidentifications)*

Myrmecocystus melliger subsp. *semirufus* var. *kennedyi* Cole 1936. Entomol. News 47:119. ♀♀♂.

Myrmecocystus semirufa. Creighton 1950. Bull. Mus. Comp. Zool. 104:442, 449 *(in part, misidentification).*

Myrmecocystus semirufus, Cook 1953. The Ants of California, Palo Alto, p. 345 *(in part, misidentification);* Gregg 1963. The Ants of Colorado, Boulder, pp. 643, 653–655 *(in part, misidentification);* La Rivers 1968. Occ. Papers, Biol. Soc. Nev. 17:9 *(misidentification);* Wheeler and Wheeler 1968. Ann. Entomol. Soc. Amer. 61:213 *(larva, misidentification).*

Myrmecocystus kennedyi, Snelling 1969. Contr. Sci., L.A. Co. Mus. 170:6; Wheeler and Wheeler 1973. Ants of Deep Canyon, 122, Fig. 45.

Diagnosis. Worker: Malar area with fewer than three erect hairs in frontal view; head polished, sparsely pubescent; promesonotal hairs short, even in length;