

spine sometimes present (fig. 2C); occipital corners of head with numerous coarse rugae as well as striae and dense, fine punctures; ventral lamella of petiolar peduncle strongly developed and with a prominent tooth; body a rather uniform and very dark reddish brown, its length 6.27-6.31 mm.

Female, alate (Cole Coll. No. Nev-760).

Eyes small (ocular index 26); cephalic rugae very coarse, wavy, tending to form reticulations on vertex; base of antennal scape flattened, dilated laterally, broader than apex; scutum with prominent longitudinal rugae; apex of petiolar node rounded; spine on venter of petiolar peduncle well developed; body subopaque, rather uniform medium reddish brown, length 7.68-7.99 mm.

Discussion.—During my investigation at the site I was able to study all four species intensively. Common where it occurs and the dominant species of the *Larrea* plant community is *pergandei*, a diurnal species which is able to flourish under extremely xeric conditions. Long foraging trails were encountered during the intense heat of the July day. Although some colonies had suspended their activities, others nearby continued their forays without interruption. At no place did I find *pergandei* sympatric with *lobognathus*, *lariversi*, or the new species.

V. lariversi and the new species occurred together at several stations, but at one station I found only the new species. These stations were all in sandy desert with mixed vegetation. Nests were in open areas fully exposed to sunshine. Each nest was surmounted by one or two circular craters of sand and each crater contained a rather large, irregular entrance. Craters of the new species were about 5 in. in diameter, whereas those of *lariversi* were 3 in. or less in diameter. Galleries penetrated the loose upper layer of sand and led into chambers in the firmer sand beneath. The depth of a nest was less than 2 feet. In no case had the ants penetrated the hardpan layer. The new species is crepuscular in habits whereas *lariversi* is nocturnal. Although winged castes of both species were within the nests between July 4 and 27, those of the new species were much more numerous than were those of *lariversi*. Mating flights were not observed.

Entire colonies of *lariversi* and the new species were excavated. One such colony of *lariversi* consisted of 342 workers, 2 nest queens, 3 alate females, and no males. A colony of the new species comprised 275 workers, 1 nest queen, 27 alate females, and 97 males. Workers of neither species attempted to bite or sting; they scurried for cover when disturbed. Stored seeds found in chambers within some nests of both species attested to the ants' granivorous habits.

V. lobognathus inhabited only the higher areas of the site and was especially abundant on Rainier Mesa, at an elevation of approximately 7,000 ft.—some 3,500 ft. above the desert floor. On the mesa the ants nested beneath large, flat, and rather firmly

imbedded rocks in a radioactively disturbed area of pinyon-juniper and sagebrush. This area is much less xeric than the lowland desert and the soil is more gravelly and more compact than that at the stations occupied by *lariversi* and the new species. Some of the overlying stones were banked lightly along the periphery with gravel placed there by the ants. One rock had an adjoining gravel crater bearing a single central entrance.

Wheeler and Wheeler (1959) have given an excellent account of nests of *lobognathus* in southwestern North Dakota. My field data on colony strength, behavior, and nest structure corroborate theirs. This species is diurnal, but it suspends activity when soil surface temperatures become high. On Rainier Mesa I opened, studied, and collected from 47 nests of strong colonies. Although *lobognathus* has been called a rare species (Wheeler and Creighton 1934; Gregg 1955; Wheeler and Wheeler 1959), in favorable locations it is probably more common than we have supposed. I feel certain that I could have located more nests than those 47 which were excavated and 11 which I did not disturb.

On Rainier Mesa, *Pogonomyrmex salinus* Olsen and *V. lobognathus* nested at the same stations. This propinquity is of much interest to me because the nest of *lobognathus* that I found near Ely, Nevada, in 1954 (Gregg 1955) also was at a station inhabited by *salinus*. Furthermore, Wheeler and Wheeler (1959) report nests of *P. occidentalis* at the same station where they found *lobognathus* in North Dakota. I suspect we will learn in time of an even greater correlation between the distribution of *lobognathus* and that of these closely related species of *Pogonomyrmex*. As Gregg (1955) and Wheeler and Wheeler (1956) have clearly pointed out, there is a remarkable degree of superficial similarity between the appearance of *lobognathus* and *occidentalis*. This resemblance extends also to *salinus* which, without magnification, cannot be distinguished structurally from *occidentalis*, but which is specifically distinct.² The reader is referred to Gregg's (1955) interesting account of the distributional problem involving *lobognathus*.

There follows a key for the separation of the workers of *Veromessor* species at the Nevada test site:

1. Middle of anterior border of clypeus with a prominent projection; eye with a distinct anteroventral angle; color piceous brown to black; strongly polymorphic; forage in files.....*pergandei* Emery
- Middle of anterior border of clypeus without a projection; eye without a distinct anteroventral angle; color pale brownish yellow to deep ferruginous brown; not strongly polymorphic; forage singly.....2
2. Head strongly, longitudinally, and rather evenly rugose, the rugae extending into the occipital region; eye small (ocular index 22), the distance from its posterior margin to the occipital

² Based upon my revisionary study of the genus *Pogonomyrmex* Mayr, which has been nearly completed.