

made no close study of *fusca* nests but numerous field notes on *fusca* show similar nests except that *fusca* nests nearly always have more elaborate top galleries, as in our figure 2, than do *sanguinea* nests. We have found three types of nests: (1) Nests in crevices of massive rock; (2) Nests in flat surfaced clay soil; (3) Nests in *fusca* mounds. The only type of *fusca* nest not represented is the occasional one in a well rotted stump or log, a type which is scarce even in wooded areas.

1. Nests in crevices of massive rock are the common type on Gibraltar Island. The first attempt to dig a *sanguinea* nest was made on one near figure 18 on the map. At ten inches deep the leading gallery passed down between two great blocks of stone that could not have been easily moved. After this disturbance the colony disappeared.

The second attempt was on a nest (Kennedy Coll., No. 1236 taken July 8, 1933) that would lie on our map between "No. 10" and the walk north of it. Dr. Norris D. Blackburn assisted in the excavation. A diagrammatic section of this nest is shown in figure 3, its three openings in figure 4. The longest opening was under the side of the surface root of a *Celtis* tree that shaded the area. The gallery leading down from it was 0.75 inch in diameter. The middle opening was 2.5 inches in diameter, that next the rock, 1 inch. The surrounding plants were largely blue grass. The nest was in the cleft between two outcrops of limestone. This cleft, about eighteen inches wide, was filled with the black soil of the island and numerous closely packed chunks of the native limestone. The top two or three inches were soil, then down to solid rock at 2 to 2½ feet, the filling was composed of soil with more than fifty per cent of its volume made of limestone chunks, one inch to one foot in diameter. There were no surface galleries (as in fig. 2). The three galleries led down eight to ten inches where the first chambers were found. Fifteen to twenty chambers were found from this level to a depth of over two feet. The greatest number were in a zone between the depths of twelve and eighteen inches. Chambers varied from 1 to 4 inches in length, 1 to 1.5 inches wide and were usually about 0.75 inch high. The position was generally just under the edge of a stone. However, the larger stones did not have nests under their central areas. The lowest chamber had a gallery that led straight down from it into the narrowed cleft between the limestone rocks.

This proved to be a queen nest. The many winged queens, of which one-third were callows, were found scattered variously in chambers at all levels. Only three males were found. There were few pupae. Ten black slaves occurred for each *sanguinea* worker. The red workers were much more solicitous in caring for the brood than were the black workers.

EXPLANATION OF PLATE II.

Figs. 2-4. *Formica sanguinea subintegra* nests. 2. Diagrammatic section of nest (type in deep well drained soil) collected on Toll Hill, Adams County, Ohio. This shows the unusual chimney-like nest openings, and the subsurface or top galleries common to *fusca* and many other ant nests. 3. A nest of the type in a broad cleft of massive limestone, collected by Blackburn and Kennedy on Gibraltar Island. 4. The openings of nest shown in fig. 3.