FURTHER NOTES ON THE HABITS OF *GEOTRUPES*
(COLEOPTERA: GEOTRUPIDAE)

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A previous note (Psyche, 57 (3): 88-92) records observations on the habits and habitat of "*Geotrupes chalybaeus*" from an atypical scrub area near Interlachen, Putnam County, Florida. Dr. Henry F. Howden informs us that these notes apply to an undescribed species. The following observations made in early March, 1935, apparently apply to *Geotrupes* (*Peltotrupes*) *profundus* Howden (= *chalybaeus* LeConte, not Mulsant.)

Thirteen holes, thought to be mouse burrows, were excavated in the turkey-oak high-pine area (*Quercus laevis*-*Pinus palustris* associates) west of Lake Newnan, Alachua County, Florida. The soil in this area is largely Lakeland sand ("Norfolk sand") or similar dry sands, which usually have a white or very light surface layer and yellowish sand beneath. Such sands are somewhat more compact and have a denser layer of tree roots closer to the surface than the St. Lucie sand in which burrows were excavated near Interlachen. Here, as elsewhere, the "throwups" or mounds were largely in groups.

Burrows were traced by inserting a wire in the hole beneath the "throwup", and digging along it with a trowel. Some burrows could be traced by a blackened ring around the inside, apparently due to deposits of organic substances from material carried down by the beetles. The depth to the apparent bottom of the burrows varied from 10" to 66", but no beetles were found in any not excavated below 48". The diameter of the burrows was rather constant at about $\frac{1}{2}$ ". Several of the burrows did not descend straight down as was usually the case near Interlachen, but deviated at various angles and then straightened again at

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various depths. A short lateral burrow beneath the mound was observed in three cases. It is possible that some of the shallow burrows excavated were in the process of being dug by the beetles or had been abandoned.

Material found in underground chambers connected with the burrows or in the burrows themselves was largely the surface "duff" of the turkey oak woods. Acorn cups, grass, live oak leaves (partly eaten?), leaf debris, pine needles, bark, and twigs were encountered along with some insect fragments. One burrow ended at 66" in a horizontal chamber about 6" long and 1½" wide. This chamber was filled with leaf debris, cut-up grass, and other material. Another ended at 48" in a chamber about the size of a golf-ball and completely filled with dry sand.

In the burrow which ended in a chamber at 66" two beetles were found: one in the burrow at 48" and another in the chamber. The latter was apparently in a death-feint, but recovered the next morning, and was observed to make a rasping sound, probably with the hind coxae and the 1st abdominal segment as in other *Geotrupes*. A similar sound was heard while one burrow was being excavated, but was mistaken for a mouse "clicking" its teeth.

The stridulation (presumably of the male) which does not seem to have been previously noted, together with the discovery of two beetles (probably the male and female) in the same burrow, strengthens the supposition that these beetles show some sort of subsocial activity.