The Mammalian Remains of the Donaldson Cave.

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While occupying the Donaldson Farm Fellowship in Zoology in Indiana University, the writer has had occasion to make frequent trips into the Donaldson Cave, situated about three miles southeast of Mitchell, Indiana. On one of these trips bones of small mammals were noticed and diligent collecting on that and subsequent occasions has resulted in the finding of identifiable remains of 244 individuals, representing eleven species. The occurrence and relative abundance of some of these species is of considerable interest and this occasion is taken to place all on record.

The list follows

1. *Didelphis virginiana* Kerr. Opossum.

   A portion of one skull found on a gravel deposit in a side passage leading off from the "big room" of the cave.

2. *Odocoilcus virginianus* (Boddaert). Virginia deer.

   A vertebra found not far from the preceding specimen has been identified for me by Mr. J. M. Gidley, Vertebrate Paleontologist of the National Museum, as the fourth cervical of this species. It was doubtless carried in, either by a flood or by some carniverous animal, in the days when deer were plentiful in Indiana, and since that time has lain undisturbed in the darkness of the cave.

3. *Sylvilagus floridanus* (Allen). Rabbit.

   Remains of three individuals found.

4. *Peromyscus leucopus* (Rafinesque). White-footed mouse.

   Mandibles of four individuals found.

5. *Microtus pinetorum* (Le Conte). Pine mouse.

   Four of this species also.

6. *Blarina brevicauda* (Say). Large shrew.

   One skull.

7. *Pipistrellus subflavus* (F. Cuvier). Georgian bat.

Partial skulls and mandibles representing eight individuals of this species were found at various points in or near the "big room."

8. *Lasiurus cinereus* (Beauvois). Hoary bat.

This species is widely distributed, but everywhere rare. The finding of two partial skulls and skeletons adds this locality to the two previously recorded for Indiana.

9. *Lasiurus borealis* (Müller). Red bat.

Remains of this species were far more abundant than of any other. More or less complete skulls and skeletons of 203 individuals were found. The abundance of the species will be discussed later.

10. *Myotis subulatus* (Say). Say bat.

One skull can be unquestionably referred to this species.

11. *Myotis lucifugus* (Le Conte). Little brown bat.

Nine skulls could be positively referred to this species. Eight others were probably *M. lucifugus*, but were too badly broken to determine with certainty whether they belonged to this or to the last preceding species.

It will be noted that the above list contains a large number (203) of specimens of the red bat and but few (17) of the little brown bat. If we turn to the living representatives of the two species this abundance is exactly reversed. Mr. W. S. Blatchley informs me that the proportion of the two species in Wyandotte Cave is about 1 to 1,000, the larger number being the brown. Mr. A. M. Banta, who has had a very extensive acquaintance with the cave fauna of Monroe and Lawrence counties, is of the opinion that the red bat never enters caves at all, and that, though common above ground, it is less abundant than the brown species. My own observations are in complete accord with those of Mr. Banta.

The period at which this change in relative abundance has taken place can not be determined accurately from the evidence now at hand. Evidently it has been within recent geological times, since many of the bones were found in places where they would have been destroyed by changes which must have taken place during some recent epoch. On the other hand many of them were found partially covered with fragments of stone which have gradually weathered away from the larger masses, and this would seem to indicate that at least a part of the bones are many years, possibly

centuries, old. For the most part they seem to lie where they fell when the animals dropped dead from the places where they clung to the roof of the cave. This seems to indicate that they died, one at a time, from natural causes.

The above facts seem to warrant two conclusions: (1) The red bat is less abundant than formerly; (2) it has changed its habits and no longer frequents caves as it did formerly.