

SOME HABITS OF TWO BURROWING SPIDERS
IN MANITOBA.

BY NORMAN CRIDDLE, DOM. ENTOMOLOGICAL LABORATORY,
TREESBANK, MAN.

Among the various natural objects met with in the vicinity of the writer's home in Manitoba, none have induced more enquiries as to their origin than the numerous open holes made by the large burrowing spider *Lycosa missouriensis* Banks. These holes are, in fact, met with wherever the soil is sandy and towards winter become very conspicuous on account of the ring of sand thrown around them by the digging spiders. The writer has long since been interested in these creatures and, more than twenty years ago, commenced some observations relating to their winter habits. Owing to the difficulty of securing their names at that time, however, the notes were laid on one side. During the summer of 1917 the old interest was revived through a visit to Treesbank, of Mr. J. H. Emerton, of Boston, Mass., the following notes being a result.

Two species of burrowing spiders are involved in these studies both sand-loving but partial, nevertheless, to certain local conditions of soil. *Lycosa missouriensis* is always found close to vegetation and prefers a situation where dead herbage of some sort is available for the construction of a turret around the entrance to its hole. *Lycosa wrightii* Em., on the other hand, inhabits the bare sand dunes only and constructs no turret. Hence, while these two species may be met with in close proximity they seldom, if ever, invade the other's territory for burrowing purposes. In life *L. wrightii* is at once told from *L. missouriensis* by its black venter.

The life-habits of these two species have already been described by Mr. Emerton* and need not, therefore, be repeated here. This paper, consequently, will be confined to a description of the burrowing habits and such other features as have not previously been touched upon.

In summer time, the excavations of both of these spiders are comparatively shallow, those of *L. missouriensis* being about 9 inches in depth, while those of *L. wrightii* are slightly deeper. It is not unusual to find females, when the young are upon their backs, with holes only three or four inches deep. As autumn approaches both these spiders commence to either deepen their burrows or prepare new ones. There is much variation in the dates when individuals begin to do so. In 1917, some were at work on August 2, while others did not commence to dig for more than a month later. There is good reason to

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