HABITS OF SOME MANITOBA "TIGER BEETLES" (CICINDELA).

BY NORMAN CRIDDLE, AWEME, MANITOBA.

This paper is the result of two years' study and a number of years' collecting in the neighbourhood of Aweme, Manitoba. It has no pretence of being complete in all details or of taking in all the forms inhabiting the Province, a very small portion of which has yet been collected over. The species and varieties mentioned, with the exception of *hirticollis* and *pusilla*, have been under personal observation, and all have been collected within twelve miles of Aweme, which is in latitude 49°, 42′; the height above the sea averaging about 1,180 feet.

In working up the habits of these insects I have received much valuable information through the generous assistance of Prof. Wickham, to whom my grateful thanks are due. I am also under deep obligation to Mr. E. D. Harris for supplying me with much information.

The species are arranged according to Dr. W. Horn's Index.

In habits, the Manitoba, and probably all the North American species, could be divided into two groups ; namely, those which hatch out in August, or thereabouts, and hibernate, and those species, such as *lepida*, which appear from pupæ towards the end of June and die before winter sets in.

This somewhat interesting difference in habit has not, so far as I am aware, received any marked attention, though I am inclined to believe that it has been a factor of some importance in the modification of a number of species.

The individuals of the first of these groups, at the approach of winter, search out a suitable situation and excavate a hole in which they pass the winter. The depth of burrow varies considerably with the different species, and even to a marked extent in forms that are classed as sub-species. The choice of a locality for hibernation varies according to the species, but all seem to prefer a situation in which there is a slant facing the south, so that they get full advantage of the sun. In investigating the methods of hibernation I have found that a shallow hole dug in the