classification of these rocks. Thus, a particular stratum may be ascertained to be marked by the occurrence in it of various fossils, one or more of which may be distinctive, either from occurring in no other bed above and below, or from special abundance in that stratum. These species may, therefore, be used as a guide to the occurrence of the bed in question, which may be called by the name of the most abundant species. In this way, a geological horizon or zone is marked off, and geologists thereafter recognize its position in the geological series. But before such a generalization can be safely made, we must be sure that the species in question really never does characterize any other platform. This evidently demands wide experience over an extended field of observation. The assertion that a particular species or genus occurs only on one horizon, or within certain limits, manifestly rests on negative evidence as much as on positive. The palæontologist who makes it cannot mean more than that he knows the species or genus to lie on that horizon, or within those limits, and that, so far as his own experience and that of others goes, it has never been met with beyond the limits assigned to it. But a single instance of the occurrence of the fossil in a different zone would greatly damage the value of his generalization, and a few such cases would demolish it altogether. The genus *Arethusina*, for example, had long been known as a characteristic trilobite of the lower zones of the third or highest fauna of the Bohemian Silurian basin. So abundant is one species (*A. Koninckí*) that Barrande collected more than 6000 specimens of it, generally in good preservation. But no trace of it had ever been met with toward the upper limit of the Silurian fauna. Eventually, however, a single specimen of a species so nearly identical as to be readily pro-