

to be narrower than the other vertical ridges. A very narrow border, Fig. 33 C, extends around the entire carapace, excepting, of course, along the dorsal line. All four vertical ridges are abruptly elevated to a height varying from one-tenth to one-eighth of a millimeter. Very abundant in thin limestone layers, about half a centimeter in thickness, interbedded in the shales, and in much smaller numbers in the shales themselves, about a mile and a half north of the store of J. B. Stratton, along the lake shore.

#### FAUNAL CORRELATIONS.

Lithologically, the cherty, light-brown or light-blue Richmond limestone, forming the upper part of the section along the eastern shore of Little Bay de Noquette, resembles the cherty Richmond exposed one and a half miles southwest of Kagawong, on the road to Gore Bay, on Manitoulin island. *Archinacella kagawongensis* is common to both localities, but no conclusions can be based upon this species alone. Among the more significant fossils found in the cherty Richmond of the Michigan locality are *Lichenocrinus tuberculatus* and *Dinorthis subquadrata*; the first is known only from the Whitewater member of the Richmond in the typical Cincinnati areas, while *Dinorthis subquadrata* occurs both in the Liberty and Whitewater members. *Chasmops breviceps* is known by me only from the Liberty member, although listed by Bassler also from the Waynesville. If *Clionychia angusta* is closely related to *Clionychia excavata*, then the occurrence of the latter in the Whitewater member should be noted. Apparently this cherty Richmond limestone may be correlated provisionally with the post-Waynesville portion of the typical Richmond section. *Helicotoma brocki* has been known hitherto only from the lower, or Waynesville member of the Richmond section on Manitoulin island. *Strophomena neglecta* is known chiefly from the upper third of the Waynesville member, although characteristic specimens occur occasionally in the Whitewater member, especially in the vicinity of Richmond, Indiana. The presence of *Amphilichas cucullus* is merely another instance of the occurrence in the Richmond, with very little change, of a characteristic Trenton species. It is very evident that, while the Cynthiana, Eden, and Maysville invasions were taking place in the states bordering on the Ohio river, a large part of the Trenton fauna was able to maintain itself in some other area, as yet unrecognized, and from this area it was able to make a second incursion into the area surrounding Cincinnati. Something similar appears to have taken place in case of the Kimmswick limestone and the upper Richmond in northern Michigan.

The more significant fossils in the argillaceous Richmond limestones on the eastern shore of Little Bay de Noquette include *Hebertella alveata* and *Platystrophia acutilirata*, from the Liberty and