

and evenly over a similar distance. Although it has heretofore been stated otherwise, the textures of the phenoclasts, in most of the stratified and unstratified glomerates examined by the writer, have been found to be slightly different from the matrix. This tends to show that the sediments forming the phenoclasts and the cement were not derived from the same horizon. It is only reasonable to suppose that this lack of homogeneity between the phenoclasts and their cement is intimately connected with their history. The writer believes that subaquatic-gliding-deformation is undoubtedly a good theory to account for the production of intraformational phenomena, but that its application in the case of the intraformational limestone glomerates is, according to the present data, extremely limited.

#### UNSTRATIFIED AND EDGEWISE CONGLOMERATES.

Of all intraformational glomerates, probably the so-called edgewise variety is the most notable in the field. Edgewise glomerates are apt to have their structure well developed by differential weathering, and the striking arrangement of the phenoclasts has caused several students of the sedimentary rocks to offer an explanation as to their origin. Probably the two leading hypotheses regarding the origin of these special glomerates are those of Hahn, and Walcott, previously mentioned. The writer believes that certain edgewise conglomerates which he has seen owe the explanation of their origin to Walcott's theory, although it is possible that edgewise breccias may be formed under the conditions postulated by Hahn and Grabau. Certain thin-bedded glomerates whose phenoclasts are but slightly abraded, probably owe their origin to such conditions as those observed by Walcott (12) at Noye's Point, Rhode Island. "I noticed that when the tide went out before daylight, the layer of fine sand and mud, exposed to the dry wind and sun during the day, hardened, and that when the surface of the water of the incoming tide was broken by small waves, the hardened layer was lifted, broken into angular fragments and piled, in some places, to a depth of several inches; while in other places it was simply turned over and was very little disturbed. When much disturbed, the edges of the fragments were rounded, so as to give them the appearance of having rolled a considerable distance. In one instance, the ensuing out-flowing tide deposited a thin layer of sand and silt over the brecciated fragments." From these observations it is evident that should the same phenomena occur on a sinking shore line, glomerates of the character so often met with by the field geologist, would be formed. When there has been a special heaping or sorting of the phenoclasts by marine currents, we should expect to find true "edge-