

numerous examples from the Cambrian to the Miocene, bringing out the interesting fact that the intraformational structures are to be found at all stages of the earth's history. He does not distinguish, however, between kinds of sediments in which these folds and *breccias* are developed, and whether or not they were formed under fresh or salt water. It is interesting to note that Hahn builds his hypothesis upon the observation of the movements and deformations of lake deposits and clays. Grabau, likewise, cites examples of deformation in the Miocenic marls of Oeningen. He shows two photographs of this clay folded in this way, in neither of which has the writer been able to observe any signs of true brecciation, or such brecciation as was supposed to have taken place in the formation of the edgewise conglomerates at Bellefonte, Gaspé peninsula, and Trenton Chasm. In short, the tightly closed and delicately delineated folds, so beautifully illustrative, are very typical of the subaqueous solifluction of clays. Whether or not this peculiar type of folding is to be found in limestones is open to question. The writer has observed such folds in clays and delta deposits, but he has not seen any signs of true brecciation. It is possible that many of the Pleistocene, and even older occurrences, may be of glacial origin. They appear to be rather typical of clay deposits and glacial rock flours. In the case of the Devonian examples of intraformational breccias from the Cape Bon Ami limestones of the Gaspé region, we have a contorted and brecciated bed made up of alternating layers of shale and limestone, which, as described, is similar to those found at Trenton Chasm. It seems a somewhat strange coincidence that while subaquatic solifluction is postulated as having taken place, in most instances, in a more or less homogeneous type of deposit, that in such localities as Gaspé, Trenton Chasm and elsewhere it should be confined to that portion of the strata in which there is a variation in the constitution of the sediments deposited. Although the writer fully realizes that the above cited facts may not be fatal to any hypothesis regarding submarine-gliding-deformation, yet, as the evidence in these cases tends very strongly to prove an alternative hypothesis, it must be scrutinized with some care. Although some "edgewise conglomerates" may be due to submarine slumping, it is difficult to conceive that the majority of intraformational breccias are the result of this process. Certain of the intraformational glomerates are of wide geographic extent, and of great stratigraphic regularity, although of great thinness. It is perhaps easier to conceive of a more or less horizontal, mud-cracked flat or tidal estuary than it is to conceive of a submarine slope, along which "slumping" had taken place regularly