

Where the rate of depression is equal to the rate of supply of material, whether each is uniform, or whether they vary, provided they vary by the same amount and in the same sense, there will be a uniform shoreward overlap of the zones of deposition. (Figure 1.) Such an equality between the two primary factors seems to have existed in many localities during the periods of deposition of the various sedimentary deposits as we find a gradual encroachment of the limestone upon the shales and of the shales upon the sandstones.

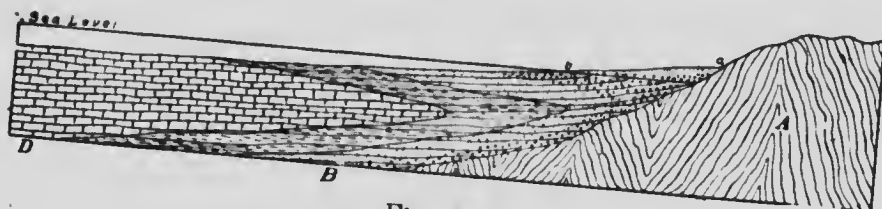


FIGURE 2.

If the rate of depression is uniform or variable but less than the rate of supply of detritus, there will be a continuous overlap, but in the opposite sense, i.e., seaward, and it may even happen that a series of land deposits overlying the older marine deposits may be formed. (Figure 2, ab.) These conditions are also frequently represented in the palaeozoic and later sediments of central North America and elsewhere. In Ontario and New York the conditions cited in the two previous paragraphs seem to have existed until the close of the Trenton, when there was a gradual shallowing of the water (accompanied probably by climatic changes), as indicated by the overlap of the Utica shales upon the Trenton limestones. This shallowing continued for a considerable length of time, so that during the Medina we find there were, in certain areas, broad tidal flats on which more or less arenaceous deposits were laid down. The fact that the argillaceous beds are separated by layers of more or less arenaceous material indicates that there were slight oscillations in the operation of one or other of the two primary