

onal valleys on the one hand like that of the Hudson and broad uplands or sea border plains, on the other such as occur over central and southeastern Massachusetts. Here we are solely concerned with a long, well defined meridional valley.

As the ice front retreats northward there is found evidence of its having halted from time to time at certain places long enough to build moraines of dumped and shoved material on the one hand, and to allow the construction, from the outwash of sands and gravels, of deposits of these materials in the form of plains, cones and deltas more or less sharply marked on their northern or iceward aspect by evidence of deposition against or in the presence of masses of melting ice. The ice melting out back of such accumulations, either moraines on the one hand or outwash plains on

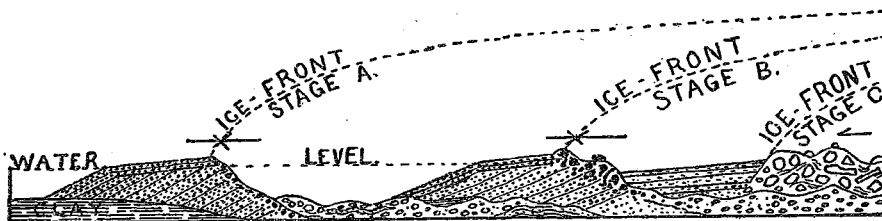


Fig. 3. Succession of glacial deposits during retreat. Theoretic distribution of glacial deposits from north to south in New York and New England: *A*—stage in which a moraine has been formed and is confronted by an overwash plain; *B*—overwash and outwash plains; *C*—a later morainal stage with outwash sands.

the other, may have left but a veneer of till or gravel over the glaciated bed rock. At an indefinite distance to the northward other frontal accumulations will appear marking the next stage in the retreat.

In the case of these deposits the coarsest detritus of glacial origin will appear next the ice front of the time in the form of till or of coarse gravels and sand; farther away in the direction of the flowing waters finer sands will appear and still farther away the clays which remained for a time in suspension. The succession of deposits will appear as in the above diagram [fig. 3.]

If the deltas are built in standing water their outer lobate margins will indicate the approximate height of the water plane of the time, be it sea level or lake level. If building takes place on an area from which the waters escape to the sea without ponding,