

distinct special phenomena, just as in modern warfare with entrenched lines there is the attack on the first line of trenches and at the same time the artillery barrage directed beyond to prevent the enemy bringing up reserves from behind.

We may now deal separately with these two regions—the littoral dune and the wandering dunes behind the same.

**The Littoral Dune.**—Quite early in the history of the art of dune fixation it was realized that a marginal belt to catch the sand as it blew up from the shore was a necessary preliminary to the planting of the ground farther from the sea. Nor did it suffice merely to maintain with a grass covering the existing marginal zone of the wild dunes, on account of the difficulties occasioned by the irregularities of its seaward edge. These included both difficulties of upkeep and liability of the dunes to local encroachment and destruction by the sea.

The ideal littoral dune should run on large lines following the general trend of the coast rather than its minor irregularities; it should also be far enough from tide-marks to be out of danger of wave erosion; finally, its crest should run fairly level and not reach too great a height.

A broad, low littoral dune will hold at least as much sand as a high narrow one, and is much easier to maintain. The littoral dunes in Gascony (45–60 feet above high-water mark) are admittedly too high; 20–30 feet, as on the North Sea and Baltic, has been found much more convenient.

In the case of the littoral dune it is a new structure that has to be built up, i.e. arrangements are made for the trapping of sand as it blows, and for the distribution and retention of this sand on the dune thus arising, so that a proper profile or section may be maintained at every stage. The littoral dune is not required for any ulterior object; it is a trap to catch and hold the sand so that it shall not drift beyond the desired limits. The device employed must therefore operate permanently.

With the wandering dune it is different. Here, once a littoral dune has been called into being, it is mainly a matter of preventing the movement of sand till such time as trees planted under shelter become capable of screening and holding the ground by themselves.