

will appear, this mobility tends to modify the type, imposing even on ligneous plants much of the habit of the perennial herb (cf. Cap. VII).

**The Occupation of Ground.**—Having sketched in outline certain of the fundamental requirements of the rooted plant, we may proceed to a consideration of the manner in which plants occupy and colonize ground, discriminating between soils which can and which cannot be invaded by plants. Observation shows that whilst some soils are usually vegetated, there are others that remain bare. This sterility depends, of course, upon definite causes, which are not always the same, and which are usually ascertainable.

Now the occupation of ground by plants is a process divisible into two phases—inoculation and establishment.

*Inoculation* is the bringing of seeds or other transportable germs. In the absence of a parent plant on the area to scatter its seeds, this service is performed by one or other of the three great natural agencies—wind, water, or animals.

In the case of seaside plants water is the most important agent. The tide brings the seeds in their season and leaves them on the drift line, whilst the occasional very high spring tides, by sweeping up the accumulations of lower drift lines, will bring the seeds to the highest levels ever visited by the waters.

Air transport and the feet of birds are minor agencies not to be overlooked. From this it follows that one reason for deferred colonization or lasting sterility of ground near the sea is lack of tidal access.

*Establishment.*—Whether ground that has been inoculated with seed will become vegetated or not must depend on a variety of circumstances.

1. *Nature of the Surface.*—If this be too hard or compact for penetration by the germinating seedling, an ordinary rooted vegetation cannot establish. At best such ground can be occupied only by such plants as Lichens and Algæ, which adhere to the surface.

2. *Stability.*—Ground may be favourable in all other respects for plant establishment and yet produce no crop in consequence