

cryptogamic plants. Linnæus observed that, as the germs of plants of this class, such as mosses, fungi, and lichens, consist of an impalpable powder, the particles of which are scarcely visible to the naked eye, there is no difficulty to account for their being dispersed throughout the atmosphere, and carried to every point of the globe, where there is a station fitted for them. Lichens in particular ascend to great elevations, sometimes growing two thousand feet above the line of perpetual snow, at the utmost limits of vegetation, and where the mean temperature is nearly at the freezing point. This elevated position must contribute greatly to facilitate the dispersion of those buoyant particles of which their fructification consists.\*

Some have inferred, from the springing up of mushrooms whenever particular soils and decomposed organic matter are mixed together, that the production of fungi is accidental, and not analogous to that of perfect plants. But Fries, whose authority on these questions is entitled to the highest respect, has shown the fallacy of this argument in favour of the old doctrine of equivocal generation. "The sporules of fungi," says this naturalist, "are so infinite, that in a single individual of *Reticularia maxima*, I have counted above ten millions, and so subtile as to be scarcely visible, often resembling thin smoke; so light that they may be raised perhaps by evaporation into the atmosphere, and dispersed in so many ways by the attraction of the sun, by insects, wind, elasticity, adhesion, &c., that it is difficult to conceive a place from which they may be excluded." †

The club-moss called *Lycopodium cernuum* affords a striking example of a cryptogamous plant universally distributed over all equinoctial countries. It scarcely ever passes beyond the northern tropic, except in one instance, where it appears around the hot-springs in the Azores, although it is neither an inhabitant of the Canaries or of Madeira. Doubtless its microscopic sporules are every where present, ready to germinate on any spot where they can enjoy throughout the year the proper quantity of warmth, moisture, light, and other conditions essential to the species.

Almost every lichen brought home from the southern hemisphere by the antarctic expedition under Sir James Ross, amounting to no less than 200 species, was ascertained to be also an inhabitant of the northern hemisphere, and almost all of them European.

*Agency of rivers and currents.* — In considering, in the next place, the instrumentality of the aqueous agents of dispersion, I cannot do better than cite the words of one of our ablest botanical writers. "The mountain stream or torrent," observes Keith, "washes down to the valley the seeds which may accidentally fall into it, or which it may happen to sweep from its banks when it suddenly overflows them. The broad and majestic river, winding along the extensive plain, and traversing the continents of the world, conveys to the distance of many hundreds of miles the seeds that may have vegetated at its source. Thus the southern shores of the Baltic are

\* Linn., Tour in Lapland, vol. ii. p. 282.

† Fries, cited by Lindley, Intro. to Nat. Syst. of Botany.