abundant than the acorns, we have still to explain what principle in vegetable life favors the rotation. Liebig adopts De Candolle's theory, as most probable. He supposes that the roots of plants imbibe soluble matter of every kind from the soil, and absorb many substances not adapted for their nutrition, which are subsequently expelled by the roots, and returned to the soil as excrements. Now, as excrements cannot be assimilated by the plant which ejected them, the more of these matters the soil contains, the less fertile must it become for plants of the same species. These exudations, however, may be capable of assimilation by another perfectly different kind or family of plants, which would flourish while taking them up from the soil, and render the soil, in time, again fertile for the first plants. "During a fallow," says Liebig, "the action of the sun and atmosphere, especially if not intercepted by the growth of weeds, causes the decomposition of the excrementitious matters, and converts the soil into humus or vegetable mold, restoring fertility."*

In one part of the pine forest I saw the Liquidambar tree growing vigorously fifty feet high, with a bark resembling cork. The bird of brightest plumage was the one called the red bird, or red cardinal (*Loxia cardinalis*), which has a full, clear, and mellow note, though no variety of song. It frequents bushes in the neighborhood of houses, where it comes to be fed, but will not thrive in captivity. One day, a son of Mr. Couper's brought us a hen cardinal bird and a wild partridge, both taken uninjured in a snare. It was amusing to contrast the extreme fierceness of the cardinal with the mildness and gentleness of the partridge. That insects, birds, and quadrupeds, of the same genera, but of distinct species, discharge similar functions in America and Europe, is well known. My attention was called here to some thorny bushes, on which the shrike or loggerhead (*Lanius ludovicianus*) had impaled small lizards, frogs, and beetles, just as I have seen mice and insects fixed on thorns by our English shrikes. Here, also, the marshes near the river are frequented by the belted kingfisher (*Alcedo alcyon*), resembling

* Liebig's Organic Chemistry, pt. i. ch. 8.