

zantine emperors, to the past glories of their race in earlier times.

Our fields are full of such degenerate flowers, with green or brown corollas, sometimes carefully tucked out of the way of the stamens, so as hardly to be seen unless you pull them out on purpose: for, contrary to the general belief, evolution does not by any means always or necessarily result in progress and improvement. Nay, the real fact is that by far the greater number of plants and animals are degraded types—products of retrogression rather than of upward development. Take it on the whole, evolution is always producing higher and still higher forms of life; but at the same time stragglers are always falling into the rear as the world marches onward, and learning how to get their livelihood in some new and disreputable manner rendered possible by nature's latest achievements. The degraded types live lower lives, often at the expense of the higher, but they live on somehow; just as the evolution of man was followed by the evolution of some fifty new parasites, on purpose to feed upon him.

It would be wrong to suppose, however, that these dry brown petals in the woodrush have now no function at all: they have found out a new one to which they have adapted themselves, although the old one of attracting insects has passed away. Whenever and however the woodrush took once more to the primitive and wasteful method of fertilization by the wind we cannot say. But it is a low, lithe, grass like plant, growing with the grasses in the wind-swept meadows; and almost all the plants of the same habit and habitat are wind-fertilized as well. Living, as they do, in great numbers close together, with bending stems and often feathery heads, they do not seem to waste so much pollen as other, taller, and more scattered flowers would waste, if obliged to trust to the breezes alone for its dispersion. At any rate, almost all wind-fertilized plants are obliged to have

some plan for preventing the pollen of each blossom from falling upon its own pistil, and so producing poor, weak, self-fertilized seeds. They almost always display some curious device, to insure a cross with the neighboring flowers. In the woodrush the thin papery petals have been utilized in a manner subsidiary to this new object. They were no longer of any service in attracting insects, but they have been very simply diverted to another function. Here I have picked one of the younger heads with the blossoms yet unopened. From the top of each flower a long white plume of three waving filaments—a Prince of Wales's feather in miniature—protrudes through the tightly closed petals. These plumes are the sensitive surface of the pistil: and to them the pollen-grains are blown from other surrounding blossoms, already fully opened. As soon as the seeds have thus been impregnated, the little plumes wither away, and then the petals, which have hitherto covered the stamens, open immediately, releasing the stamens, as you see them in the first head I plucked. The pollen blown from them falls upon some other flower still in the bud; and so each head as it opens fertilizes in turn its unopened neighbors. You can gather lots of them here in every stage of blossoming, from the first receptive period with hanging plumes and tightly covered stamens, to the last distributive period with open petals and stamens shedding freely their golden pollen-grains.

This pretty nodding sedge, on the other hand, shows us another way of solving the self-same problem—how to prevent the pollen from falling upon the pistil of its own blossom. The sedge has done it very simply, by putting all the stamens in one head of flowers at the top, and all the pistils in another head at the bottom. Look closely into this plant again, and you will see at once that it has gone even further than the woodrush on the downward path of degradation. It has no trace of petals at all; indeed, it