some tree, that it was retained as a permanent genetic modification and transmitted to all that tree's progeny, that it conferred an advantage on its possessors, and that such advantaged forms gradually won out over rival forms not similarly endowed.

Banana vs. Palm

It is interesting in this connection to consider the case of the banana and the palm. Directly in front of me as I write stand growing side by side a feather palm and a banana plant. The banana has reached its full height, but the palm is still young, so at the moment both are about the same size, 12 or 15 feet tall. The leaves of the palm, pinnately compound, are perfectly formed to allow the free passage of the wind; although they bend and sway incessantly, they retain their shape and substance undamaged. In contrast, the leaves of the banana, unbroken as they emerge from the growing tip, are torn and shredded by the wind even before they have fully expanded, and the longer they live the more they are shredded. Each rent runs from the margin of the leaf back to the midrib, following the lines of the numerous parallel and equidistant veins, so that at last the leaves become divided into a series of parallel lateral segments of approximately equal width. The appearance of such leaves approximates so closely the appearance of the palm leaves that where the two overlap I have to look carefully to distinguish one from the other.

Why is the palm leaf so exquisitely wind-adapted and the banana leaf so patently ill-adapted? Why does the banana continue, generation after generation, to send forth its huge, single-surface leaves (8 or 10 feet long by 1 to 1½ feet wide), only to have them torn to shreds by the first strong wind? Why has it never "learned" to produce a feathered leaf in the first place, as the palm presumably did?

The Lamarckian interpretation would at once answer that the banana has never "learned" to pre-adapt its leaf to the wind because, reproducing vegetatively (by basal shoots), it has no germ plasm to be "taught". The natural selection view, although reaching the same conclusion, does so by a very different route: since no seeds are produced, no transmissible mutations can occur, hence all new plants are identical with their predecessors—are, in fact, not new individuals at all but nothing more than renovated parts of the same individual.

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ABSTRACT

SHURTLEFF, MALCOLM C. 1989. **Diagnosing shade tree diseases.** Grounds Maintenance 24(6):22, 24, 26, 68, 72.

Learning how to diagnose common diseases will help you maintain healthy trees. Rapid and accurate diagnosis is the first step in the treatment of any disease. Follow these basic steps: 1. Evaluate the overall appearance of an unhealthy tree. When you evaluate problem trees on-site, knowledge of the past history of a tree will help you to determine the *true* cause or causes of a problem. 2. Look for direct evidence (signs) of the cause. Examine the foliage, twig and branch system, trunk and roots. A weakened tree is much more susceptible to secondary attacks by insects (such as borers) or diseases (like canker, certain wilts, root rots and wood decay). 3. You may need a laboratory examination and/or culturing to confirm your tentative diagnosis.