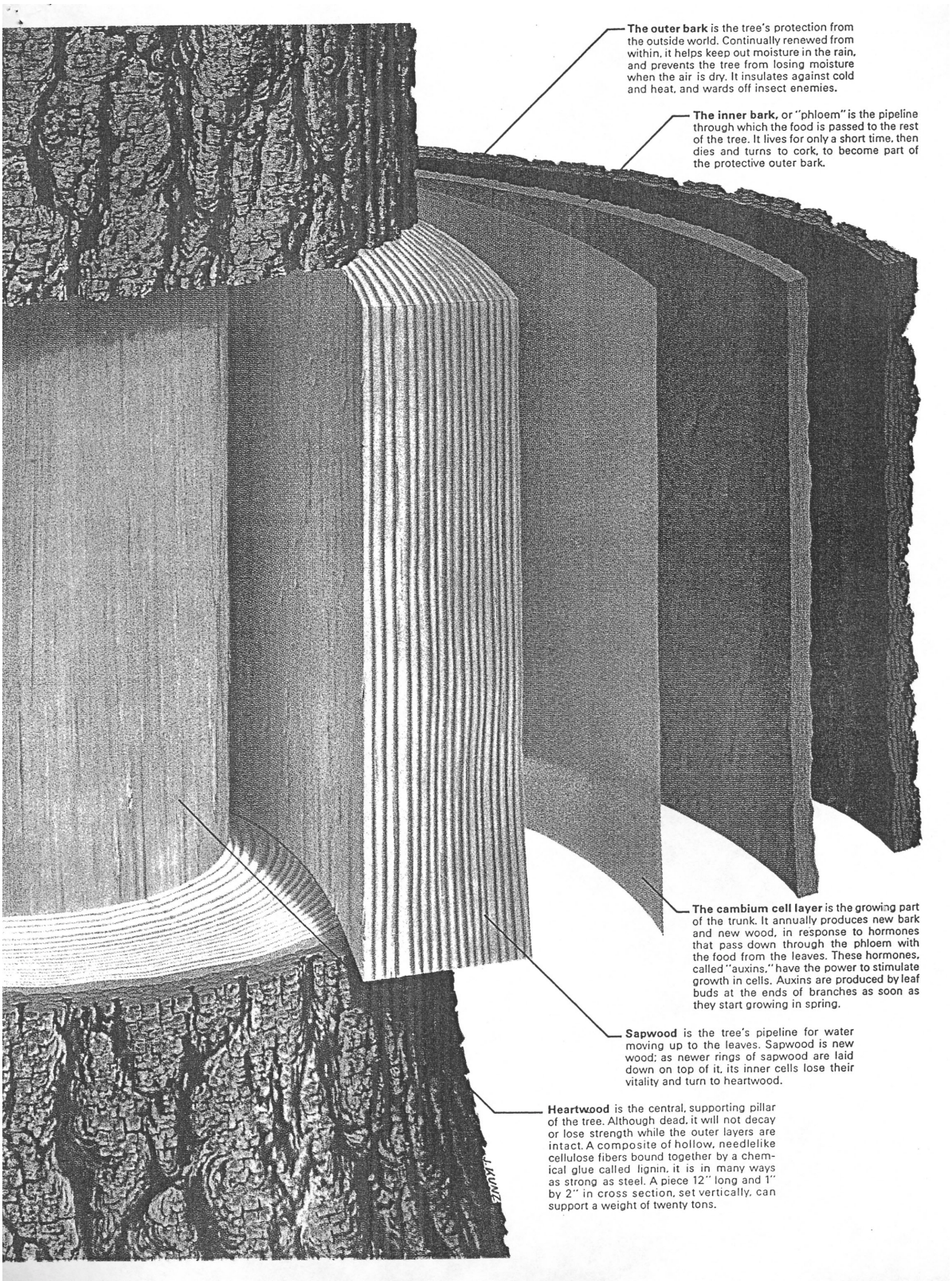
The outer bark is the tree's protection from the outside world. Continually renewed from within, it helps keep out moisture in the rain, and prevents the tree from losing moisture when the air is dry. It insulates against cold and heat, and wards off insect enemies.
The inner bark, or "phloem" is the pipeline through which the food is passed to the rest of the tree. It lives for only a short time, then dies and turns to cork, to become part of the protective outer bark.
The cambium cell layer is the growing part of the trunk. It annually produces new bark and new wood, in response to hormones that pass down through the phloem with the food from the leaves. These hormones, called "auxins," have the power to stimulate growth in cells. Auxins are produced by leaf buds at the ends of branches as soon as they start growing in spring.
Sapwood is the tree's pipeline for water moving up to the leaves. Sapwood is new wood; as newer rings of sapwood are laid down on top of it, its inner cells lose their vitality and turn to heartwood.
Heartwood is the central, supporting pillar of the tree. Although dead, it will not decay or lose strength while the outer layers are intact. A composite of hollow, needlelike cellulose fibers bound together by a chemical glue called lignin, it is in many ways as strong as steel. A piece 12" long and 1" by 2" in cross section, set vertically, can support a weight of twenty tons.
J. KUNZ