

erside. Every living and growing part of the tree therefore, is increased in thickness each year by a layer of new wood, just inside the outer bark. In any cross section of a trunk or branch, these annual deposits may be seen in the form of distinct concentric rings. By counting these rings, we may tell the age of the tree, or any part of it, and by a comparison of the relative sizes of the rings, we may also learn much of the history of the tree, and the times through which it has passed. A thick ring naturally represents a season of good growth, while a narrow one near it indicates that growth in some way has been checked. It may have been by lack of cultivation, or draught or by the ravages of caterpillars on the foliage. Each ring is an annual chapter in the history of the tree, and the more we study the nature and habits of trees, the better are we able to read the history written in these rings.

Experiments to Prove Theories.

As a means of proving that the annual increase comes from the downward flow of the cambium, rather than from the direct upward flow of the sap, as is often supposed to be the case, we have only to tie a band

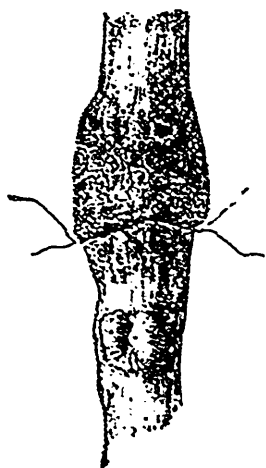


FIG. 2243. A young tree, in which the growth is checked by label wire.



FIG. 2244. A pine girdled by mice. The lower part has only four annual rings while the upper part has eight. (From Bailey's Pruning Book.)

tightly about any rapid growing part, so as to check the downward course of the cambium, and note the rapid increase in growth above the band just as a dam thrown across a stream increases the volume of the stream above it.

The accompanying illustrations show this very clearly.

That the new growth is laid on each year in rings just beneath the inner bark may be proven by lifting a corner of bark and inserting beneath it a thin sheet of tin foil, then binding the bark in place again so that it will rapidly heal over. Before long all trace of the wound will have disappeared, but when the trunk is cut through at that point, the tin foil will be found to be covered with a ring of wood corresponding to each year that has elapsed since it was placed there.

The annual laying on of new growth may also be easily seen in the gradual healing and covering over of wounds made in pruning.