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A Steep Climb Up The Stem

Mrs. William Starr Dana

It is all very well, you may think, to say that the pressure from the root sends the water up through the stem; but when we cut across such a stem as a tree trunk, one finds it full of wood, with a little tightly packed soft stuff in the center, and not hollow like a water pipe, as one would suppose from all that has been said about the way the water rises in the stem.

No, a stem is not a hollow pipe, or even a bunch of hollow pipes, it is true; and it does seem something of a question, how the water can force its way through all this wood; and even if one hears how it is done, it is not an easy thing to make clear either to grown people or to children. But I will see what I can do; and I know that you really love these plants and trees, and will try to be a little patient with them and with me.

The water, or liquid, when it mounts a stem or tree trunk, takes a path that leads through the new-made cells. Each young cell wall is made of such delicate material that it allows the water, or broth, to filter through it, just as it would pass through a piece of thin cloth. And so it makes its way from cell to cell, along the stem, more slowly than if it were passing through a hollow tube, but almost as surely. It is true, the earth broth does not reach the leaves above without having given up something to the little cells along the road. These seem to lay hold of what they specially need for their support, while the rest is allowed to pass on.

I want your teacher to prove to you by a little experiment that water makes its way up a stem.

If she will place in colored water the stem of a large white tulip, cutting off its lower end under the liquid, those parts whose little cells are in closest connection with the stem will soon begin to change color, taking the red or blue of the water; for a freshly cut stem has the same power as the root to suck in water eagerly and quickly.



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