

explain why. If the day is cold enough you may at last get the water down to the freezing point. You will find, however, that it does not go on shrinking right down to where it begins to freeze. A little expansion actually occurs before the freezing point is reached, but unless your bottle be very large and have a very narrow neck, you may not be able to see this. If you can get a small glass tube and pass it through the cork and then shove the cork hard into the bottle full of water, you may make a very narrow neck for the bottle, and then you may be able to see this slight expansion of the water before it is quite down to the freezing point.

But what happens when the water actually begins to freeze? Leave the bottle of water out on a very cold night and see what has happened in the morning. You will find that the bottle has cracked, showing that when the water began to freeze it must have expanded in volume, and as the bottle couldn't expand also, the latter was shattered. So we see that while water vapor and water both shrink steadily as they cool, when water turns into ice it expands instead of shrinking, and therefore the ice must be less dense than the water. Now, any solid that is less dense than water will float on water, and so we see why ice always floats on water instead of sinking. Try this for yourself with a lump of ice and a tumbler of water. Try and judge how much of the ice is above the water and how much below. If you can judge very accurately you will find that there are about eleven times as much of it below as above.

How many different effects produced by this expansion of freezing water can you think of? There are some very important ones indeed; but we must leave such questions as these for another leaflet.

Water-Drops in Literature.

(A sequel to "Nature Study," November REVIEW, page 107.)

T. You have now been making observations on water drops of all kinds for the last few weeks, and you know how fogs, clouds, rains, dews, and even the beautiful snow crystals come. Now let us search for some references, say, to dewdrops in literature. Let us notice what some of our great writers knew, or thought about, when they saw the pearl or diamond glitter on the fairy draped blades of grass in the early morning. Most of them did not know so much as you do about them, although the thoughts awakened in their minds may have been more picturesque. But why should not we have just as picturesque thoughts aroused by the sights?

S. Why? I think we do. The more you know about a thing the more thoughts you can have about them.

T. That is a very wise observation. I cannot put it any better. I think you are right. But even when little is known of a thing, the poet can take pleasure in it. But if the poet showed that he didn't notice accu-

ately what he professed to have seen, what would you think of him?

S. Not very much. For we read books only when they tell us something better than we could ourselves.

T. Very good. Now I commence by reading my quotation. It is more than 3,000 years old.

Hath the rain a father? or
Who hath begotten the drops of dew.

—Job xxxviii, 28.

What remark can any of you make on this?

S. I think that in those days the works of nature were not so closely examined as to-day, and the poet mentions these phenomena as specimens of the mysteries which people in that day could not venture to explain.

ANOTHER S. He has it in his mind that rain and dew come from something before them, as is the case with men and animals, but no one appears to have known from what they came. The dewdrop came out of the still air, but from what?

T. These two answers are quite to the point. But let us have another quotation.

S. Dewdrops are the gems of morning,
But the tears of mournful eve.
—Coleridge—*Youth and Age*.

T. What is the picture or figure here?

S. The morning is decked in gems, and is gay; the evening is dark, and the moisture on the grass suggests tears.

T. Well, let it pass, and have another.

S. The dew
'Tis of the tears which stars weep, sweet with joy.
—Bailey—*Festus*.

T. Why does the poet make the stars weep, do you think?

S. The stars are the most striking objects visible at night, and the dewdrops are underneath them, as if they fell as tears. But as the poet is not sad, he feels he must correct his picture by noting that the emblem of sorrow is sweet with joy. They are teardrops, but not of sorrow: for the stars are happy.

S. The dew-bead
Gem of earth and sky begotten.
—George Eliot—*The Spanish Gypsy*.

T. Here the dewdrop is a gem, as in the mind of Coleridge.

S. Seems to me George Eliot was thinking of the question of Job, and answered it, though not in the scientific way Job challenged. The earth and the sky are the parents of the dewdrop, but that poetic fact was patent even in the days of Job.

T. Would not the cloud and the earth make good parents of the dew?