NATURE STUDY AND SCIENCE.

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An Autumn Lesson on the Branch of a Deciduous Tree.

Each pupil is provided with two branches, at least two years old, bearing smaller branches-one branch alternate-leaved, as the alder, and one with opposite leaves, as the maple. Every conclusion reached should be based on observed facts, and the reasons for each step in the mental process be fully and clearly stated by the pupils.

OUTLINE.

1. The buds at the ends of the branches (terminal buds) and in the angles (axils) above the leaves (the axillary buds) are noted.

2. Find where the terminal buds of last year were. Tell how to/find them, and those of the year before that (1899).

3. How much each branch increased in length this year-last year.

4. Note what the parts of the branch which grew out this year bear (leaves and buds) which are not borne by the parts which grew last year.

5. Why is it that the leaves and buds are borne only on the parts of the branches which grew this year ?

6. Find where the leaves and buds used to be on the parts of the stem which grew last year. 7. Show what last year's terminal buds became

(continuations of the branches, bearing foliage-leaves), and what last year's axillary buds became (branches bearing foliage-leaves).

8. Although these buds, both axillary and terminal, are called leaf-buds, show that they do not develop into leaves, but into branches (or continuations of the stem or branches) bearing foliage-leaves.

9. Show that there are no buds which become leaves only.

10. Why are there no leaves on the parts of the branches which grew out last year, or in years before last year ?

11. Where are scars, left by those leaves, to be found ?

12. Find how much the branch increased in length this year-last year-and (if the branch is three years old) in 1899.

13. How can you tell where each year's growth (in length) begins and ends?

14. How do you account for the greater thickness (diameter) of the branch at the base than at the top? 15. Find how many layers of wood there are in the

part which grew out the present year? which grew out last year ? which grew out first in 1899?

16. Which is the oldest and which the youngest of these layers of wood ? and how long is each layer ?

17. When the leaves are alternate, as in the alder, how many buds arise at each node? How many branches?

18. When the leaves are opposite-two at one node -as in the maple, how many branches usually arise from one node? Why? Account for the exceptions if you find any.

19. Show how the leaves are prepared to fall off easily (by the stalks becoming brittle at the place where they separate from the branch).

20. What would the leaf-buds now on these branches have become next spring? Why do you think so?

NOTE.-On the speckled alder, in autumn, may be found the buds of next year's staminate catkins (the long buds) and pistillate catkins (the small, undeveloped buds).

An Incident in the Life-History of Two Snakes. (The following observations were made by Mr. Matthew Duffy, at Denety Post Office, in Queens County, N. B., where he was teaching school).

In March last, a friend and I chanced to find two snakes in a spring of water. We placed one of them on the snow; and, as the evening was very cold, it soon became quite stiff-so stiff that I was afraid to bend it, lest it might break.

The other snake we hung up on the limb of a tree. The next morning it was perfectly rigid, and could not be taken down without breaking. But about noon it thawed, and when it was placed in the spring it became quite lively.

The first snake, which had been on the snow all night, was apparently quite dead in the morning. When laid upon the water, ice formed on it at first, but before night it also revived.

I have found snakes in rotten logs in the winter revive in the same way. Surely the life of these animals cannot depend upon the circulation of the blood.

Questions for October.

(On the Dispersion of Seeds.)

(Answers to these questions should be sent to the editor of this department by the middle of November)

1. Find two trees which have winged fruits (a wing is a thin flat extension), and make a drawing of each fruit.

2. Find two trees, or other plants, one naked-seeded, the other covered-seeded, which bear winged seeds. Make a drawing of each seed.

3. Mention three plants which employ passing animals to transport their seeds. Find and state what