

5. Various nuts like the Brazil, almond, walnut, and pecan.
6. Mince pie and pumpkin pie.
7. Various topics related to animals such as Geese in Lithuania, The Pig on Christmas Morning, Peacocks, Turkeys, Reindeer.
8. Poems such as "The Mistletoe" by Bryan W. Procter and, and "Hunting the Wren" by Florence Boyce.
9. Paper, cellophane, cardboard, boxes, Christmas cards, and glue.
10. The Rubber Plant.
11. Dyes.
12. Christmas shopping.
13. The Yule Log.
14. Candles.
15. Corn Products and their bearing upon Christmas.
16. Christmas Cribs.
17. The Relation of Yeast and Bacteria to Christmas.
18. Frankincense.
19. Myrrh.
20. The Camel and Christmas.
21. My Mother's Center Piece.
22. The Christmas Stocking.
23. Santa Claus.

The classroom may be somewhat transformed for the occasion. If the seats are moveable, arrange them in the form of a circle. Place a table in the center of the circle, and set upon it a plant or two decorated for the event.

An appropriate Christmas carol or two sung at the beginning of the period also adds to the spirit of the hour. A student specializing in music may be asked to direct this part of the program.

We have found that this procedure gives us a good opportunity to integrate Biology with such subjects as English, Mythology, Art, Music, Speech, Home Economics, History, and Biblical Literature. The instructor as well as the students of both high school and college have found that a class period so used can be very interesting.

The education thus received really reaches further than the individual class members, for the students have frequently reported on how interested their parents, grandparents, and friends were in the biological facts which they

could disclose to them about the most commonplace things which contribute to the enjoyment of Christmas. "How far that little candle throws its beam."

LUCILE EVANS,

*Milwaukee State Teachers College,
Milwaukee, Wisconsin.*

BIOLOGY DIARIES FOR TRAINING IN OB- SERVATION

One of the recognized objectives of biology teaching is training in accurate observation. While the instructor can plan his class and laboratory work to attain this objective, it is difficult to know how well the pupils are practicing the same principles outside.

In an attempt to extend this training into everyday life, and to aid the pupils in developing a leisure-time interest in science, the members of three biology classes were asked to keep diaries of their observations.

Each pupil was given a mimeographed sheet including sample entries from nature diaries and the following list of suggestions:

(1) Use a cheap notebook instead of a regular diary. Then you will have space to write as much or as little as you prefer.

(2) Write something every day if possible; and don't trust your memory too long.

(3) Be accurate. If you are not sure what kind of animal you saw, say so. If someone tells you there was an eagle down by the river, write in your diary that you *heard about it*, not that you saw it.

(4) If you need more information about something you have seen, look it up, or ask about it in class. But when you get help from a person or a book, admit it. If the information is correct, your helper deserves credit. If it is wrong, then you won't have to take quite all the blame.

(5) If you have trouble finding something to write about, ask questions. The following outline may give you ideas:

(a) Examples of biological principles: balance of nature; protective adaptations; cooperation of living things; etc.

(b) Effect of weather and change of season on living things.

(c) Identification of living things. (When you learn a new species, jot it down.)

(d) How plants and animals carry on the necessary life processes.

(e) Scientific discoveries, inventions, or principles which you read about.

(f) Examples of good scientific attitudes, or the opposite; examples of poor reasoning, superstitions, etc.

The day after the instruction sheets were passed out, a field trip was devoted to general observations intended to stimulate interest in the diaries. A week later in class, a few entries from Theodore Roosevelt's DIARIES OF BOYHOOD AND YOUTH were read aloud. After a period of one month the diaries were collected for grading. Although it seems unwise to emphasize grades on such outside work, pupils are anxious to know their rating; and grading is perhaps the most satisfactory way of telling them.

The diaries varied greatly, style and grammar ranging from pitiful to riotously funny. The observations were generally rather obvious, with little interpretation of their biological significance. Some were decidedly improved in subsequent work; and a few pupils wrote with enough insight that their diaries were really pleasant reading.

At the end of the second month pupils were allowed to substitute some other project for the diary. Some, by this time, had developed a more specialized interest. But the majority, perhaps because of mental inertia, continued with their diaries. During the last six weeks of the semester, when project work was entirely optional, eleven out of the seventy-two pupils continued their nature diaries.

If a few can learn to enjoy recording their observations, and the rest become slightly more aware of their environments, diaries are certainly worth trying.

TYPICAL ENTRIES FROM BIOLOGY DIARIES

September 26. I disturbed the balance of

nature by cutting our lawn.

September 27. On my way home from school, I saw a large black ant carrying a dead one. I touched him with a leaf and he dropped his burden and ran.

October 24. This morning I saw two wasps on the sidewalk. They could crawl around, but couldn't fly. They crawled sort of lopsided too. I went on and in the next block, I saw another one just like the other two. That makes four I have seen that way.

November 10. On my way home, I saw many various objects which took my eye. I stopped to watch the tiny creatures I saw some squirrels storing up food for winter which shows how smart a little creature can be.

November 11. Coming home from town, I saw a deer, or something on a car. It was brownish gray and had big horns, or whatever you call them. He was dead and tied to the car. The car was from Missouri.

November 12. As I happened to be out walking through the park, they were cutting limbs from various trees and then painting the places where the operation took place to keep the trees from dying.

November 18. Flowers is something we very seldom eat, but califlower is an exception.

November 20. I saw a flock of small birds today. I do not know their name. They are small and have gray backs and white breasts. They fly in the weeds and when they go down by the ground, they sound like a rabbit is in the weeds. There was about 20 or 30 of them in one flock.

December 8. In the paper I read an article about Luminous Fish. It says the fish of the deep seas are able to produce light. They do not use the light to see but, to attract other fish. The scientists do not know the exact way the fish produce the light. They know it is partly produced by the food they eat.

December 14. I was watching a dog trot today and it looked to me as if he was running lopsided or something. It may have been just the way he was turned.

December 22. Today was our sixth snow, and the temperature has been about 20° all day long.

December 28. Today I saw a squirrel running across the grass. It went up a tree and around on the opposite side from which I was on. Squirrels always do that when someone comes after them. I think it is an excellent way of protection from hunters and other enemies.

RICHARD F. TRUMP,
Senior High School,
Keokuk, Iowa.