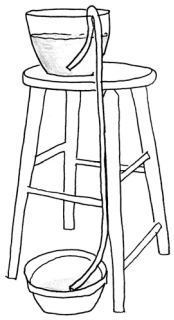
SCIENTIST OF THE DAY

A CLASSROOM OR HOME SCIENCE PROGRAM FOR STUDENTS AGES 6-12

by Linda Pierce Picciotto

Introduction



The Scientist of the Day program proved to be very popular in my primary classes (K-1, 1-2, and 2-3.) As I explain in the program description, it benefited students in many ways, and it was one of my favorite teaching activities. It took time to set it up but, once that was done, the program more or less ran itself, and it was fun for the students, their parents, and for me. We all learned a lot, and we all looked forward to our weekly “Scientist of the Day” presentation.

Using the instructions outlined in the book, the forms that are ready to be photocopied, and this collection of classroom-tested experiments, teachers or parents will be able to start using the program right away.

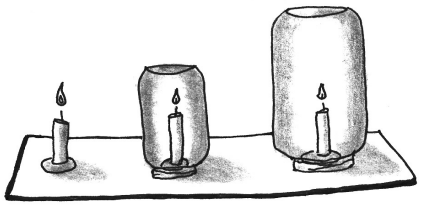
Everyone enjoys watching these demonstrations, and some students may be inspired to continue their studies to become “not just for a day” scientists!

In This Book You Will Find:

- Introduction
- Scientist of the Day**--a program description**
- Scientist of the Day**--a program summary and to-do list**
- Three sample science **notebook forms** completed by young students

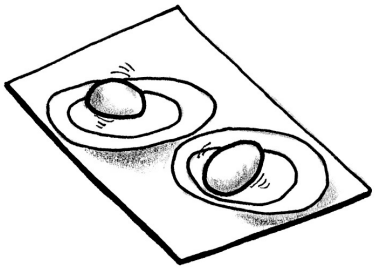
- To photocopy:
  - a Scientist of the Day **letter to send home to parents**
  - a form for the students' science notebooks
  - two record-keeping forms for teachers

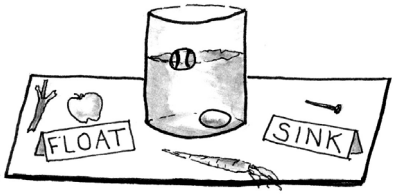
- Index of Science Experiments
- Science experiments--46

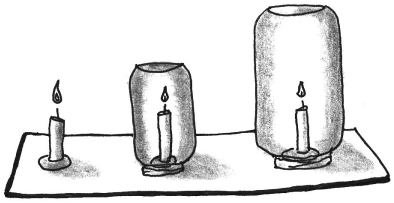


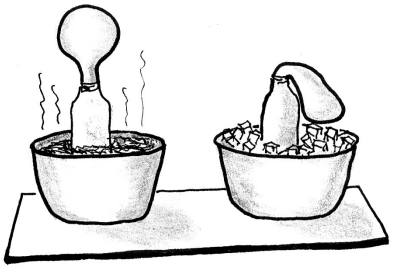
Science Experiments

1. Crushing Air
2. The Spinning Egg Puzzle
3. The Water Glass Trick
4. Dry Paper
5. Floating and Sinking
6. Oil and Water
7. Pennies
8. Rising Raisins
9. Egg in Water
10. Dilution
11. Hot and Cold Hands
12. Light Bulb
13. The Three Candle Race
14. Candle in a Jar
15. Testing for Starch
16. Cap in the Center
17. Bottle Balloon

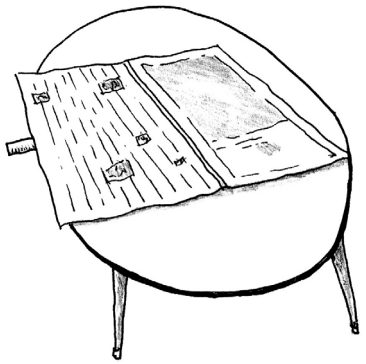


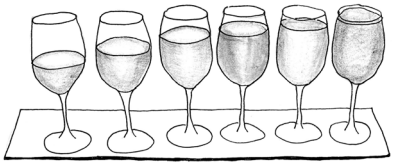


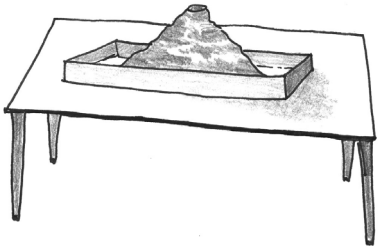


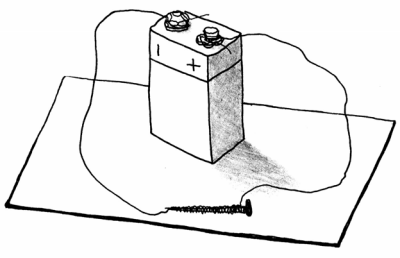


18. Hiding from the Wind
19. Scatter
20. Color Mix
21. The Magic Glove
22. Hot and Cold Water
23. The Deep Sea Diver
24. Strong Newspaper
25. Eggshell Power
26. Musical Glasses
27. Liquid Layers
28. The Soap Boat
29. The Volcano
30. Strong Air
31. Electric Coil
32. Burning the Candle at Both Ends
33. Candles in a Bowl
34. Drops of Color
35. Leaping Water
36. Bottle and Cork
37. The Pop Can

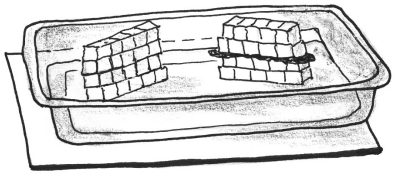








38. Swinging Balloons

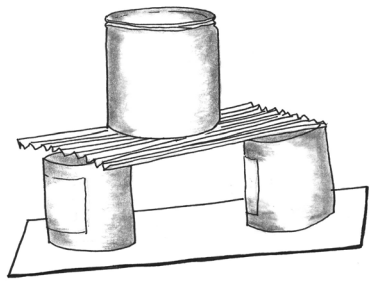


39. Standing on Paper

40. Corrugated Paper

41. Sugar Wall

42. Water Power



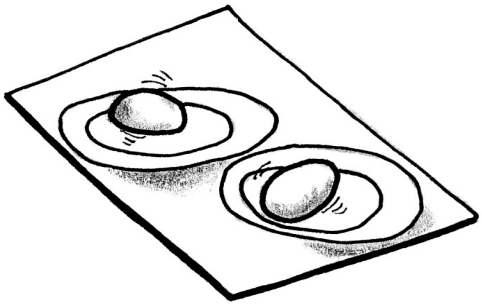
43. The Siphon

44. Ice and String

45. Spear It!

46. Egg and the Bottle

2. The Spinning Egg Puzzle



You will need:

- 2 small plates
- one hard-cooked egg
- one raw egg

(Mark them so you will know which is which, but don't tell the audience that there is a difference!)

First: Spin each egg on its sides, first separately and then at the same time on separate plates so all can observe their movements.

You ask: ***"What did you observe?***

Then ask: ***"I wonder why the eggs behaved differently. Does anyone have a suggestion?"***

[When you ask questions, encourage different members of the audience to suggest possibilities, being careful to say something like "That's one idea, who has another?" or "Maybe…" to keep them thinking, instead of saying "That's right" or "That's wrong."]

Now: Tell the class that one is hard-cooked and one is raw. Spin them again.

You ask: ***"Does anyone have an idea how you can tell which is which?"*** See if they can suggest ways they can tell by watching the way the eggs act.

Now: Tell them which one is the raw egg and which one is hard-cooked. The raw egg wobbled, and the hard-cooked egg was steady. The hard-cooked egg may have also spun on its end for a while.

You say: ***"Now I'm going to spin them at the same time, stop them from turning very briefly, and then release them. Watch what happens. Which egg seems to want to keep turning?"***

Now: Tell the class that it's the raw egg that wants to continue turning.

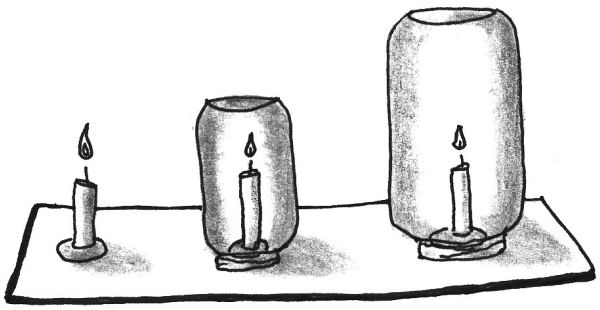
You ask: ***"Can anyone suggest why that might be?"***

Explanation (To be read or explained by the teacher or, if in a higher grade, the student.)

The inside of the raw egg is liquid, so the yolk and white slosh around a bit. That makes the raw egg wobble.

When the eggs are stopped briefly, the liquid in the raw egg keeps moving, due to *inertia.* When the eggs are released, the raw egg keeps spinning but the cooked egg does not, for it is solid and stops completely, both inside and out.

13. The Three Candle Race



You will need:

- 3 short candles, each firmly attached to lids using modeling clay, melted wax, or glue
- two glass jars of different heights that fit upside down over 2 of the candles
- matches

You say: ***"I am going to light the candles, then I am going to turn these jars upside down over two of them. I wonder which candle will burn the longest. Does anyone have a prediction?"***

[When you ask questions, encourage different members of the audience to suggest possibilities, being careful to say something like "That's one idea, who has another?" or "Maybe…" to keep them thinking, instead of saying "That's right" or "That's wrong."]

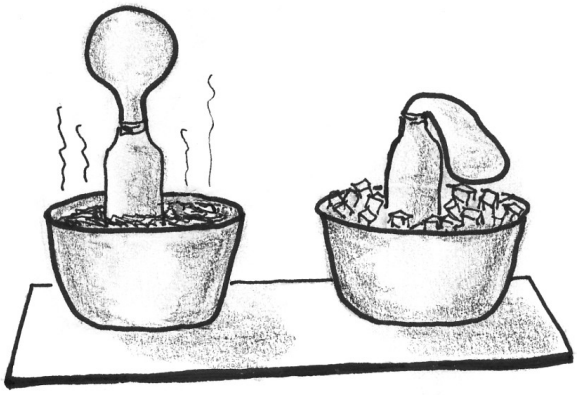
Now: Light the candles. Leave one candle open to the air, cover one candle with the small jar, and cover one candle with the larger jar. Watch to see which goes out first and which goes out next.

You ask: ***"Why do you think the candle under the small jar went out first, and why did the candle that didn't have a jar over it last the longest?"***

Explanation (To be read or explained by the teacher or, if in a higher grade, the student.)

Air is composed mostly of two gases, nitrogen and oxygen. When the candle burns, it uses up the oxygen, so the candle without a jar over it burns the longest. There's a lot of air in the room! There isn't much air in the small jar, so the candle under it cannot burn for long.

17. Bottle Balloon



You will need:

- a plastic bottle with a narrow top, like a pop bottle
- 1 balloon
- 2 deep bowls
- very hot water
- cold water
- ice

First: Fill one of the bowls about half way with very hot water, and fill the other half way with cold water and ice cubes. Fit the balloon over the mouth of the bottle.

You ask: ***"I wonder what will happen when I put this bottle into a bowl of hot water?"***

[When you ask questions, encourage different members of the audience to suggest possibilities, being careful to say something like "That's one idea, who has another?" or "Maybe…" to keep them thinking, instead of saying "That's right" or "That's wrong."]

Now: Hold the bottle upright in the bowl that contains very hot water.The balloon starts to inflate.

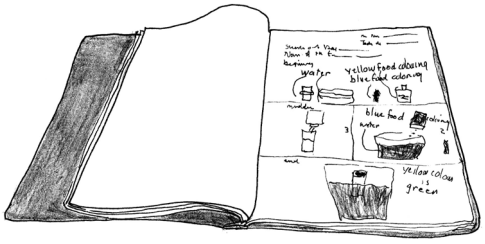
You ask: ***"I wonder why the balloon is inflating? Who has an idea?"*** After discussing the problem for a time, ask, ***"What do you think will happen if I move the bottle to the other bowl, which is filled with cold water and ice cubes?"***

Now: Move the bottle to the second bowl. The balloon will deflate. Move it back to the hot water to see if it will start to inflate again.

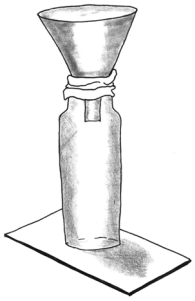
You ask: ***"Who has an idea about why the balloon deflated in the ice water?"***

Explanation (To be read or explained by the teacher or, if in a higher grade, the student.)

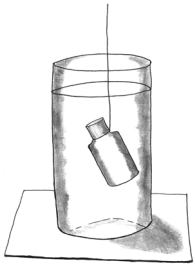
When the air in the bottle is warmed by the hot water, it expands and takes up more space, so it starts filling the balloon. When the air is cooled by the ice, it contracts and needs less space, so the balloon collapses.



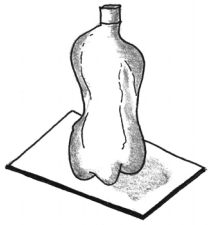
Science Notebooks



The recording system is one that most students enjoy. It will help them learn and practice a number of different skills, such as identifying the important parts of the experiment, sequencing, summarizing, labeling, and drawing. Each student has a notebook with forms that are divided into 3 sections, where they will draw what happened at the beginning, the middle, and the end of each experiment. The form to be duplicated is in the “To photocopy” section. In the book you will find samples of work completed by young students using this form.



Before students begin drawing, the Scientist of the Day should print his or her name and the title of the experiment on the board so that class members can complete the top of the “write up” form. Words that students might want to use for labeling their drawings might also be written down. For at least the first few demonstrations, the teacher might want to lead discussions that will help students in the class decide what they will draw in each section of the form. (“What happened first? What would you say was the middle part, and what might you draw in that box? How did the experiment end? How will you show that?) Some students will be eager to begin their drawings without this help, and some may want to participate in a discussion after many of the presentations.



Students will find that some experiments are easier to summarize by drawing than others. Some students may want to draw 4 or 5 pictures instead of 3, some label everything, and some label items only the first time they are drawn. All students’ skills improve as they gain experience recording the experiments. They are encouraged to use their own creativity to decide how to record what they observed. By keeping all of the recordings in one notebook, students, their parents, and the teacher can note the improvement made in recording observations, and students will have a record of the many different experiments they saw and discussed.

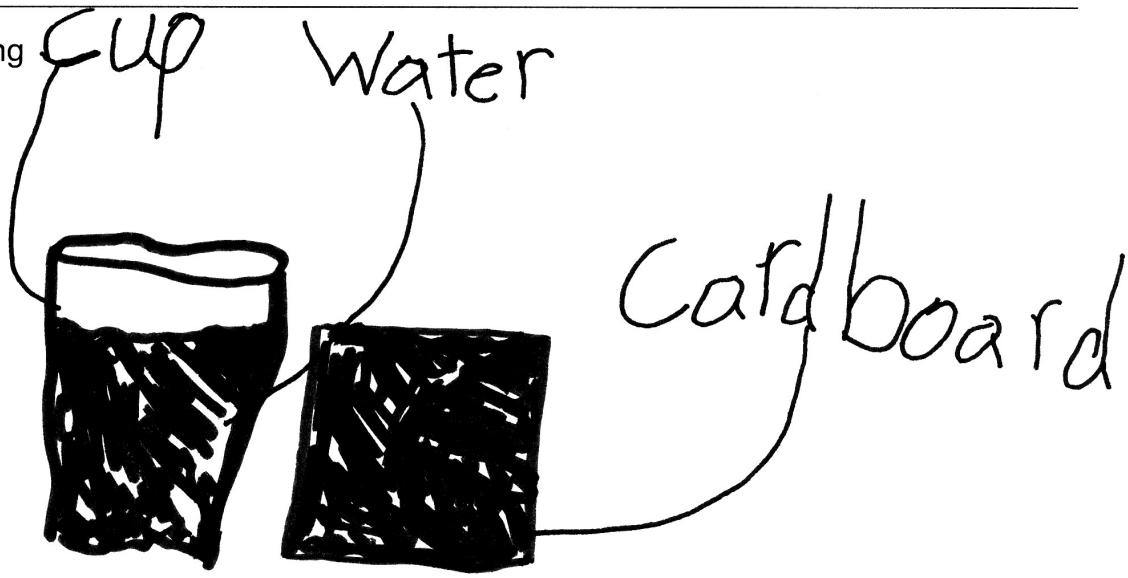
My name Hugh

Today's date May 6

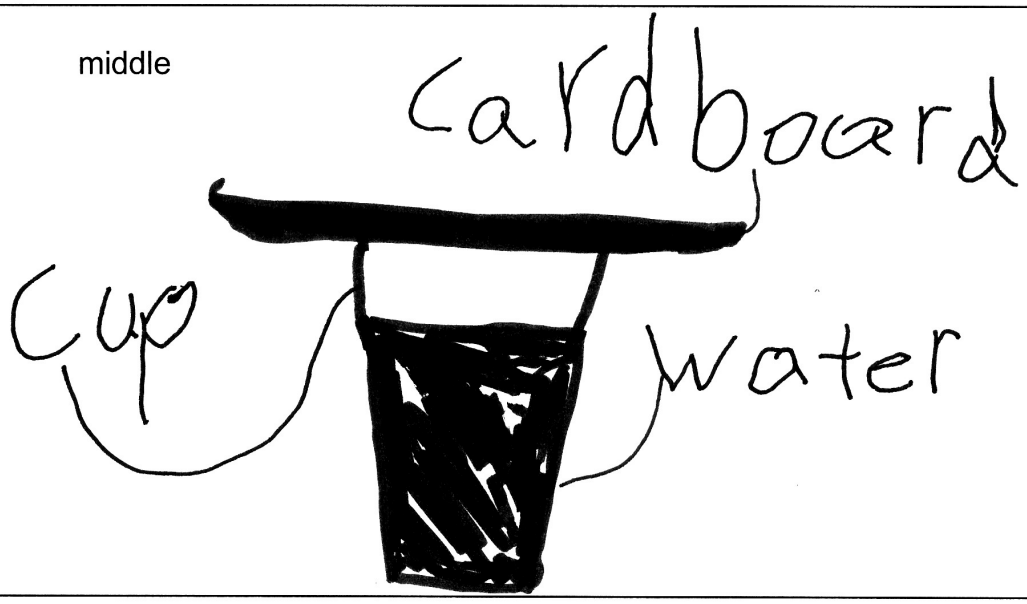
Scientist of the Day Evan

Name of Experiment Water Glass trick

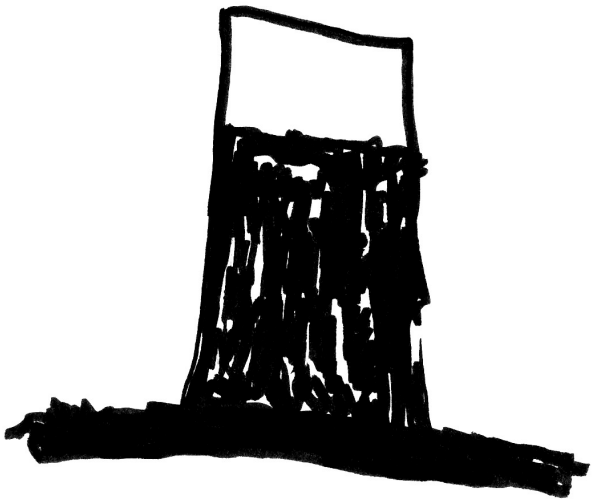
beginning



middle



end



My name Robin

Today's date Jan. 21

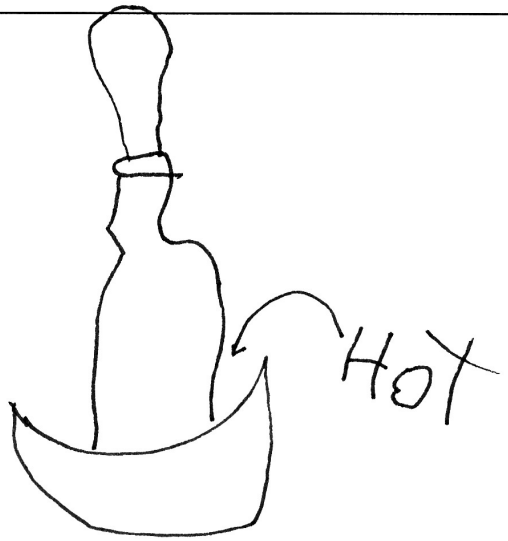
Scientist of the Day Jonathan

Name of Experiment Bottle BALLOON

beginning

middle

end



SCIENTIST OF THE DAY

by Linda Pierce Picciotto

Children love science! Here's an easy, enjoyable way of bringing more science into the classroom and the home. *Scientist of the Day* is an ideal resource for teachers and parents.

The forty-six science experiments in this book have been tested in the classroom. Students will be able to demonstrate their chosen experiments in front of their classmates, friends, or families. By asking the questions suggested in the instructions, they will engage their audience in predicting, describing, and hypothesizing. All will be "thinking like scientists!"

Linda is an experienced primary teacher who developed and used this program for many years. It was a favorite of students and their parents, and many have asked for her collection of the most successful experiments. Scholastic Books published three books she wrote on teaching, evaluating, and reporting methods. After her retirement she co-authored a book on the history of South Park School in Victoria, Canada, a family-involved alternative school where she taught for 25 years.

Her husband Charles is a Professor Emeritus of Physics who taught at the University of Victoria for 40 years. He made sure that the explanations are correct and clear.