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Another Christmas Experiment

Glen Loveridge
Silver Heights Collegiate

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ANOTHER CHRISTMAS EXPERIMENT*

Glen Loveridge
Silver Heights Collegiate
350 Lodge Avenue
Winnipeg, Canada
MB R3J 0S4

Introduction

In the December 1974 edition of *Iowa Science Teacher's Journal*, p. 24, I described a peanut brittle lab which could be done just before Christmas. This year I would like to describe a Candy Cane Lab.

This lab is a modification of a lab given to me by the Science/Math Resource Center, Delaware Technical and Community College, Georgetown, DE 19947. This center publishes an excellent monthly newsletter listing numerous practical suggestions for all grade levels from elementary to senior high. If you wish to be on their mailing list, write to Mrs. Eleanor F. Sloan at the Center. They would also welcome any new ideas which you might wish to share.

Now for the details of the lab. You will need to have red food coloring on hand. For each student, you will need four 20 x 150 mm test tubes. Fill one test tube with sugar and another half-full of starch. Half fill a test tube with water and add a few drops of peppermint flavoring. To another test tube, add a pinch of cream of tartar (potassium bitartrate). Provide a small cube of margarine (about 2 cm to a side) and a weighing boat.

Note: For teachers who haven't discovered weighing boats, I would recommend them as a great means of dispensing solids. They are small (about 8 cm x 8cm x 2cm) and flexible (they can be bent in order to facilitate pouring solids). The boats are made of plastic and are disposable; however, they will last for about ten weighings. The weighing boats are available from Canlab, their number V2045-10, price \$10.40 for a package of 500.

I find that all levels of science students can do this lab, and it takes from 40 to 60 minutes depending on student ability. Try to have your students work individually. To make sure they have read the instructions, and before giving them the apparatus, ask them questions such as, "What will be the shape of your product?" "What will be the color of your product?" If they can't answer correctly, have them reread the instructions.

*Glen Loveridge teaches science at the grade 10, 11, 12 level. He would appreciate hearing from readers who have other Christmas labs or ideas.
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The Laboratory Exercise

Object:

To investigate the effect of temperature and of twisting on a visible group of molecules.

Notes:

1. Full test tube of white solid is sucrose.
2. Half test tube of white solid is starch.
3. Half test tube of liquid is a plant extract solution.
4. Test tube with a pinch of white solid is cream of tartar.
5. Piece of yellow solid in container is margarine.

Method:

Time is quite critical in this experiment. Try to follow instructions exactly as they are given.

- a. Grease one side of a piece of aluminum foil. Wash and dry your hands. Pick up four test tubes from the front bench.
- b. Into an Erlenmeyer flask pour the test tube of sucrose, the half test tube of starch, a half test tube plant extract solution and the test tube with the cream of tartar. Mix with a stirring rod for one minute (the mixture should be creamy).
- c. Let the mixture settle for a few minutes.
- d. Clean the stirring rod with hot water and put it away.
- e. Set an Erlenmeyer flask on a ring (with wire gauze platform) of a ringstand. Clamp the neck of the flask to the ringstand and heat the flask with a Bunsen burner.
- f. Heat the settled mixture until it boils. It is very important to use a low heat so it doesn't burn.
- g. Once it is boiling, continue to use the low heat. Let it boil for five minutes, but it should remain fluid.
- h. Using the clamp attached to the flask as a handle, pour one half the mixture onto the greased aluminum foil.
- i. Ask your teacher to add red food coloring to the remaining half of the mixture, and pour this onto the aluminum foil beside the first sample.

- j. Allow the mixture to cool for a few minutes. During this time, using the clamp as a handle, quickly clean the flask using a brush and hot water. Put away the flask and clamp.
- k. Return to your samples and grease your hands slightly. Roll each sample separately in your hands until each looks like a long worm. Twist them together and then bend into the shape of a fish hook.
- l. Allow your product to cool for several minutes. During this time, wash and return your test tubes. Put away the remaining apparatus.
- m. Analyze the result, and see how it compares with the commercial product of the same species.

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Fifth Northeast Iowa Science and Engineering Fair

Upper Iowa University will be host to the Northeast Iowa Science and Engineering Fair on March 31, 1978. Entrants will be from many of the junior and senior high schools in the ten-county Northeast Iowa area.

Exhibits for the fair will be set up in the Dorman Gymnasium on the Upper Iowa Campus. For further information, contact Dr. James R. Janecke, Upper Iowa University, Fayette, Iowa 52142.

* * *

New ISTJ Associate Editor

Mr. Herman Kirkpatrick of Des Moines has been appointed by the *ISTJ* Advisory Board as an Associate Editor in Physics Education.

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ISTS Short Course

Make a note to attend the Iowa Science Teachers Short Course at Ames, on March 3, 1978. Contact Robert Hanson, Executive Director, Iowa Academy of Science, Chemistry Department, University of Northern Iowa, Cedar Falls, Iowa 50613, for details concerning the program.

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Eastern Iowa Science and Engineering Fair

The 19th Eastern Iowa Science and Engineering Fair will be held March 18 and 19, 1978, at Washington Senior High School, Cedar Rapids, Iowa. For further details contact Joe Beach, Director, Box 1032, Cedar Rapids, Iowa 52406.