Contents

Introduction

The activities in this book are designed primarily for general use in the classroom, although they can be easily adapted for individual science projects. Most of the activities have been performed by students in the fifth and sixth grades for a science display, and it has been found that these students have benefitted greatly by directly participating in science experiments.

The projects cover many topics, providing you with a large selection so that you may choose those projects that best fit the needs of your class. They are generally based on observation and thus are designed to help inform the teacher as well as the students.

To obtain the greatest benefit from these projects, it is suggested that they be treated in the same manner as experiments. In other words, the students should first discuss what they hope to gain from doing the project. Then everyone should become familiar with what is going to take place or how the experiment will be performed. When the project is completed, the students should draw conclusions as to what they have learned. In their discussion, they should decide whether or not they have gained the information they sought at the beginning of the project. If not, perhaps the experiment should be repeated or modified.

Some of the projects can be performed by a group of children; and it is suggested that, depending on the ability of the students, you assign these projects for a group presentation. In this way some of the burden is removed from you, and the children benefit by direct participation in science. You will also find that often a child can explain something to another child better than a teacher can.

Most of these projects use such easily-obtainable items as milk cartons, thread, and nails. For your electricity projects you will want to obtain a large amount of bell wire and at least

one six-volt battery. It would probably be extremely useful to have a science cabinet where you can keep all your basic supplies for your science projects. In this way, your materials will always be readily available; and if you suddenly decide a point could be explained better by demonstration, you can use the materials from the cabinet rather than spending several days in gathering things together—and probably losing the class' interest in the interim.

This book provides the teacher, and in turn the class, with many good, basic science projects. It is hoped that creative minds will extend these projects, thus providing a greater depth of understanding. Encourage your children to perform these projects again at home and to change them as they so desire. You will find that by using projects and demonstrations, the interest of your students in science will grow and their general knowledge of science will improve.

CAUTION

This book is intended as a teacher's resource. Do not assign activities to students until you have instructed them in laboratory safety. Since even the simplest experiment done improperly may be dangerous, all general safety precautions should be taken. Be sure to allow for adequate ventilation and have a fire extinguisher readily available. Adult supervision should be maintained during any experiment.

1

Earth Sciences

Alum Crystals
Erosion
Stalactites
Volcanoes
Growing Crystals
Preserving Fossils
Dissolving Rocks
Sugar Crystals

Alum Crystals

Objective

To demonstrate the way in which crystals may be formed, and to examine alum crystals specifically.

Materials

A package of alum from the chemist, a peanut butter jar and lid, a nail, a hammer, thread, boiling water, and tape.

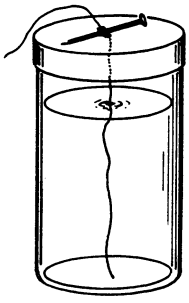
Procedure

Punch a hole in the jar lid with the nail. Screw the lid on the jar and push the thread through the hole until the thread reaches the bottom. Anchor the other end by tying it to a nail, so it doesn't slip through the hole in the lid.

Boil enough water to fill your jar almost to the top. Place a cup of alum in the jar and then pour the water over it, leaving a small air space in the jar. Screw the lid back on, making sure the thread hangs free in the liquid. Tape the hole completely with masking tape.

Swish the water around by tipping the jar, shaking the alum up well. Repeat this action every fifteen minutes for half an hour. Wait an hour and then shake the jar again. Then set the jar in a quiet place where it will not be disturbed.

After an hour the crystals will begin to form, and by the next morning, you should have a whole string of crystals. Each time you do this experiment, you will find that your crystals will be different in size and overall appearance.



You might suggest that the students grow crystals at home, and then establish a day for them to bring their crystals to class for comparison. A magnifying glass will be extremely useful in helping them examine the basic structures of their crystals.

Erosion

Objective

To provide a classroom demonstration of erosion, and to draw conclusions as to the application of the demonstration to real situations.

Materials

An aquarium or large box, enough good soil mixed with sand to half fill your aquarium, hedge or plant clippings, and a sprinkling can or jar.

Procedure

Place the soil in your aquarium so that it forms a fairly steep slope. Make a flat surface at the top of the slope. Plant the clippings in this flat area, thus creating your hillside model. Ask the children if they know what will happen to the soil when it rains. Then sprinkle the clippings thoroughly each day.

Have the children make the following observations after they have studied the model:

1. When the water is running off the soil, where does the soil go?
2. How does the soil on the top look?
3. How does the soil on the bank look?
4. Is there new soil at the bottom of the tank? What does it look like?
5. What happens to the soil if little depressions are made around the clippings?
6. Japanese farmers plant their plants on little mounds of earth. This is called terracing. Try this and see what effect it has on the soil.
7. Have members of the class suggest other possible solutions to the erosion problem. Try implementing their suggestions on your model and observe whether their suggestions work.