



# THE MCGRAW-HILL big book — of — science activities



**Fun and Easy Experiments for Kids**

**More than 250 kid-tested  
experiments  
from "Science Kids"**



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**FULLY ILLUSTRATED**

★ Fun at School ★ Fun at Home ★

★ Rainy-Day Projects ★ Great Science Fair Projects ★

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**ROBERT W. WOOD**

**IDEAL  
FOR KIDS  
8-12**

# **The McGraw-Hill Big Book of Science Activities**

**Fun and Easy Experiments for Kids**

**Robert W. Wood**

**McGraw-Hill**

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**The McGraw-Hill  
Big Book  
of  
Science  
Activities**

# Introduction

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This book consists of seven parts introducing geography, chemistry, meteorology, geology, animal biology, plant biology, and engineering.

Science is a subject that becomes instantly exciting with even the simplest discoveries. On any day, and at any time, we can see these mysteries unfold around us.

This book was written to open the door, and to invite, the curious to enter—to explore, to think, and to wonder. To realize that anyone, absolutely anyone at all, can experiment and learn. To discover that the only thing you really need to study science is an inquiring mind. The rest of the material is all around you. It is there for anyone to see. You have only to look.

Be sure to read the How to Use This Book section that follows before you begin any experiments. It warns you of all the safety precautions you should consider before you begin a project and whether or not you should have a teacher, parent, or other adult help you.

Completely read through a project before you begin to be sure you understand the experiment and you have all of the materials you'll need. Each experiment has a materials list and easy, step-by-step instructions with illustrations to help you.

Although you will want to pick a project that interests you, you might want to do the experiments in order. It isn't necessary, but some of the principles you learn in the first few experiments will provide you with some basic understanding and help you do the later experiments.

Finally, keep safety in mind, and you are sure to have a rewarding first experience in the exciting world of science.

## How to Use This Book

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All of the experiments in this book can be done safely, but young children should be instructed to respect fire and the hazards associated with carelessness. The following symbols are used throughout the book for you to use as a guide to what children might be able to do independently and what they *should not do* without adult supervision. Keep in mind that some children might not be mature enough to do any of the experiments without adult help, and that these symbols should be used as a guide only and do not replace the good judgment of parents or teachers.



Materials or tools used in this experiment could be dangerous in young hands. Adult supervision is recommended. Children should be instructed on the care and handling of sharp tools or combustible or toxic materials and how to protect surfaces.



Protective gloves that are flame retardant and heat resistant should be worn. Handling hot objects and hot wax can burn hands. Protect surfaces beneath hot materials—do not set pots of boiling water or very hot objects directly on tabletops or counters. Use towels or heat pads.



Protective safety goggles should be worn during each experiment to protect against shattering glass or other hazards that could damage the eyes. Keep in mind that in chemical laboratories, for example, workers wear safety goggles at all times—regardless of the specific experiment.



Flame or another heat source is used in this project and adult supervision is required. Do not wear loose clothing. Tie hair back. When handling candles, wear protective gloves—hot wax can burn. Never leave a flame or a source of heat unattended. Extinguish flame properly. Protect surfaces beneath burning candles.



The use of the stove, boiling water, or other hot materials are used in this project and adult supervision is required. Keep other small children away from boiling water and burners.



Electricity is used in this experiment. Young children should be supervised and older children cautioned about the hazards of electricity.

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# **PART I**

## ***GEOGRAPHY***

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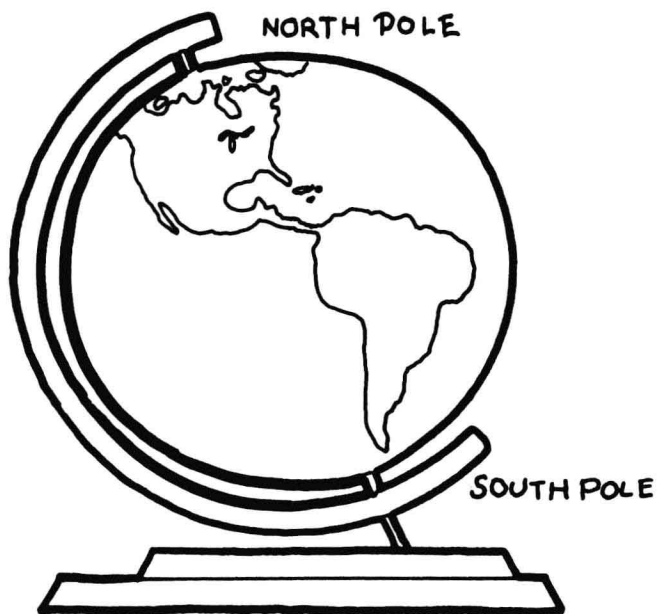


## 1

***Map of the Earth***

Look at the map of the earth and you will notice that the North Pole is at the top and the South Pole is at the bottom (Fig. 1-1). You also can see that it is divided in the middle by the equator (Fig. 1-2). The map is further divided by lines running up and down and lines running from left to right, or around the globe. Map makers draw these lines to help us find directions, the time, and the seasons. The lines running up and down all come together at the North Pole and the South Pole. These are the lines of longitude (Fig. 1-3). The lines running across the map from left to right are the lines of latitude (Fig. 1-4). They are divided by the equator. The areas of the earth north of the equator have winter in January and summer in July. The areas south of the equator have opposite seasons—winter in July and summer in January (Fig. 1-5).





**Fig. 1-1.** A globe is a spherical model of the earth that shows the continents and the seas.



**Fig 1-2.** The earth is divided around the middle by the equator.