



TABLE OF CONTENTS

HOW THIS MANUAL CAN BE USED	1
HOW TO PRESENT ELEMENTARY NOMENCLATURE MATERIAL	3
Activity 1: Matching Picture and Label Cards	4
Activity 2: Matching Picture, Label and Definition Cards	6
INTRODUCTION	8
BOTANY	11
Introduction	11
Identification	14
Background Information	14
Herbaceous Plants	14
Activity 1: Reviewing the Parts of a Herbaceous Plant	17
Activity 2: Identifying Common Flowering Herbaceous Plants	19
Common Woody Plants	21
Activity 1: Reviewing Parts of a Tree or Shrub	27
Activity 2: Illustrating Trees and Shrubs	29
The Main Characteristics of Plants	32
Activity 1: Comparing the Five Main Characteristics of Plants and Animals	37
Activity 2: Learning Which Organisms Are Plants	39
Roots	41
Background Information	41
Activity 1: Identifying Roots and Their Functions	45
Activity 2: Learning How Root Hairs Contribute to Root Function	47
Stems	49
Background Information	49
Experiment 1: Demonstrating Circulation in Plant Stems	54
Activity 1: Identifying the Parts of the Stem	56
Activity 2: Determining the Age of a Tree by Counting Its Rings	58

Leaves	60
Background Information	60
Experiment 1: Demonstrating That Leaves Transpire	66
Experiment 2: Demonstrating That Plants Need Light	68
Activity 1: Identifying the Parts of the Leaf	71
Activity 2: Defining Leaf Shapes	73
Flowers	75
Background Information	75
Activity 1: Relating the Parts of the Flower to Their Functions.	78
Seeds and Fruits	81
Background Information	81
Activity 1: Learning the Functions of Fruits and Seeds	83
Basic Needs of Plants	86
Background Information	86
Experiment 1: Demonstrating That Plants Need Water and Warmth to Grow	91
Experiment 2: Demonstrating That Most Plants Need Soil to Grow	95
Experiment 3: Demonstrating That Plants Require Nutrients for Growth	97
Experiment 4: Exploring the Properties of Different Soils	99
Activity 1: Demonstrating That Soil Is a Mixture of Different Particles	101
Humans and Plants	103
Background Information	103
Plants as Food	103
Activity 1: Exploring Staple Foods Around the World	109
Activity 2: Exploring Fruits and Vegetables	111
Activity 3: Exploring Herbs and Spices	113
Other Uses for Plants	116
Activity 1: Investigating Plant-Derived Fabrics and Dyes	120
Activity 2: Investigating Forestry and Logging	122
Activity 3: Investigating How People Use Plants	124
Plant Care	126
Activity 1: Growing Common Garden Flowers	130
Activity 2: Growing Bulbs	132
Activity 3: Caring for Indoor Plants	135



Introduction to Microscopic Organisms	137
Background Information	137
Activity 1: Investigating Microscopic Organisms as Spoilers	140
Activity 2: Investigating the Role of Microscopic Organisms in Bread Baking	142
SCIENCE EXPERIMENTS	145
Experiment 1: Oxidizing Fruit	147
Experiment 2: Sprouting Seeds Without Soil	149
Experiment 3: Growing Plants Without Soil	151
Experiment 4: Growing Mold on Bread	153
Experiment 5: Blocking Sunlight from a Leaf	155
Experiment 6: Identifying Plant Pigments	157
RESOURCES	160
GLOSSARY	164