Second Edition

Addison-Wesley Science

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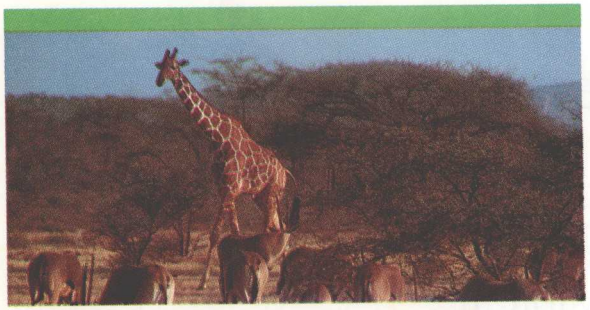

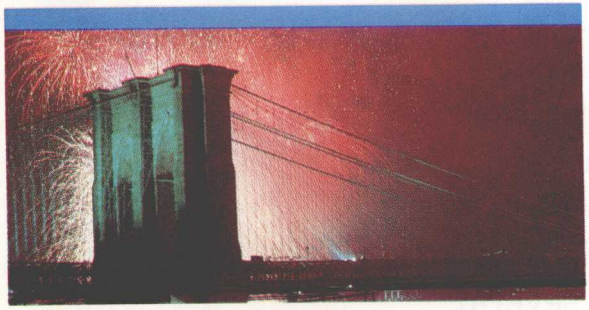

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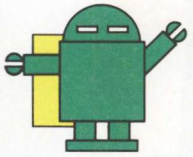
Getting to Know *Addison-Wesley Science*

This book has been made to help you understand and enjoy science. It will help you find answers to questions about the world. It will help you discover new things, too.

Before you use *Addison-Wesley Science,* take some time to find out how it is organized. That will make science easier to understand. Look at the table of contents on the next two pages. Notice that this book is divided into four units. Each unit is made up of several chapters. Each chapter is divided into a few lessons.



The beginning of each unit gives you a preview of the chapters in the unit. Which unit are you looking forward to? Turn to it. Look at the chapter previews. Why do you think these chapters make up this unit?

Addison-Wesley Science has many other features to help you understand and enjoy science. Look through your book. See what other features you can find.

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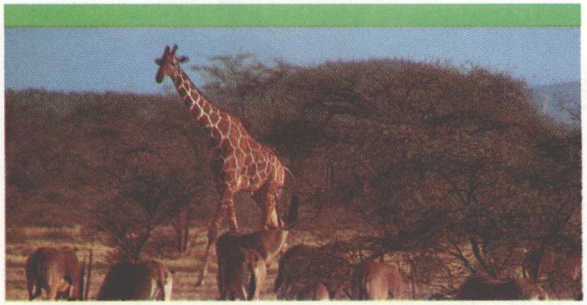
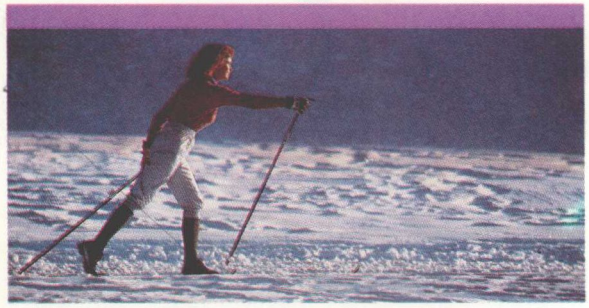




Reading Science

Reading a science textbook is not like reading a story. When you read science, you are reading to learn more about the world around you. Reading a science book can be fun, but you may have to work a little to understand the science. You will need to study what you read. You will also need to remember as much as you can.

Here is a way to help you study. Following these steps will help you understand science.

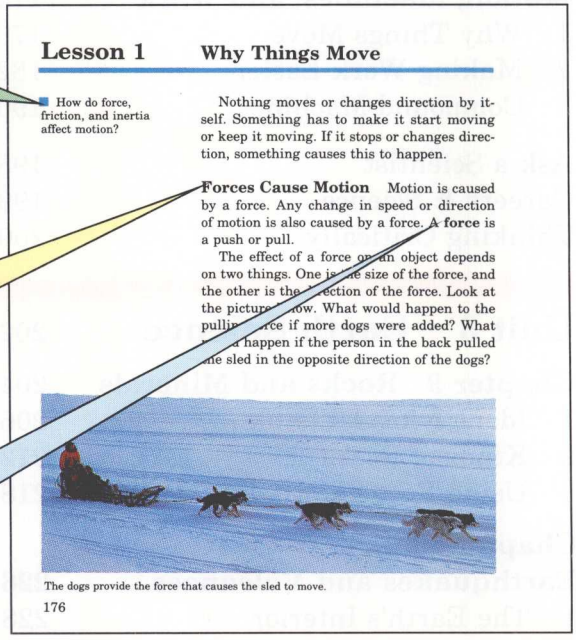
1 Skim

Skim means look over. Read all the titles in the chapter. Notice the science words. Look at the pictures. These things will tell you what the chapter is about. Think of what you already know about this topic.

Each lesson begins with a purpose question in the margin. After you read the lesson, you should be able to answer the question.

A lesson is divided into sections. Each section begins with a title in dark print.

Within a section, important science words are in dark print. You need to remember what each science word means.



Lesson 1 **Why Things Move**

How do force, friction, and inertia affect motion?

Nothing moves or changes direction by itself. Something has to make it start moving or keep it moving. If it stops or changes direction, something causes this to happen.

Forces Cause Motion Motion is caused by a force. Any change in speed or direction of motion is also caused by a force. A **force** is a push or pull.

The effect of a force on an object depends on two things. One is the size of the force, and the other is the direction of the force. Look at the picture below. What would happen to the pulling force if more dogs were added? What would happen if the person in the back pulled the sled in the opposite direction of the dogs?

The dogs provide the force that causes the sled to move.

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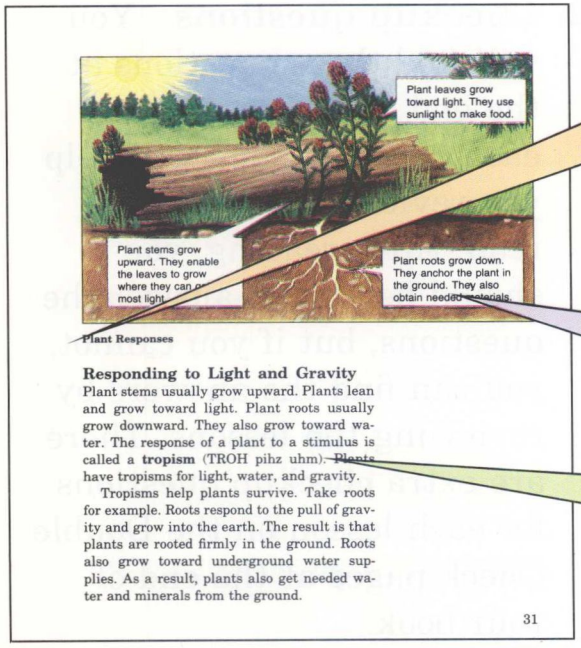
2 Read

Carefully read one section at a time. Try to find the main idea. Learn what the science words mean. Try to pronounce the new words that are respelled. Look at all the pictures. Read the labels and captions. They make science easier to understand.

3 Review

Review means look back over. Read all the section titles again. Look at the pictures again, too. They will remind you of the main ideas. Make sure you can define all the science words. Also, make sure you can answer all the questions. The more times you review, the more you will remember.



All of the pictures have captions. A caption is a title or description. Sometimes it is a question to make you think about the picture.

Some drawings have labels. The labels tell what is happening in the drawings.

Some words are respelled. The respelling tells you how to pronounce the word that comes before it.

Thinking About Science

As you study science, you will probably ask a lot of questions. You will have to answer a lot of questions, too. You will run into some questions as you read. When you do, you should stop and think about the answers.

Knowing more about questions will help you be a better question answerer. Here is one way to look at questions. Think about where you will find the answers. Two kinds of questions in *Addison-Wesley Science* are answered right in the book.

1. **Purpose question** Read the question in the margin before you read a lesson. It tells you the purpose of the lesson. Read the question again after you have read the lesson. If you cannot answer the question, you should read the lesson again.

2. **Checkup questions** You will find these questions at the end of each lesson and each chapter. They will help you review what you have read. After reading, you should be able to answer the questions, but if you cannot, you can find the answers by reviewing the lessons. There are extra checkup questions for each lesson on the Double Check pages at the end of your book.

Four other kinds of questions in *Addison-Wesley Science* are not answered entirely in this book.

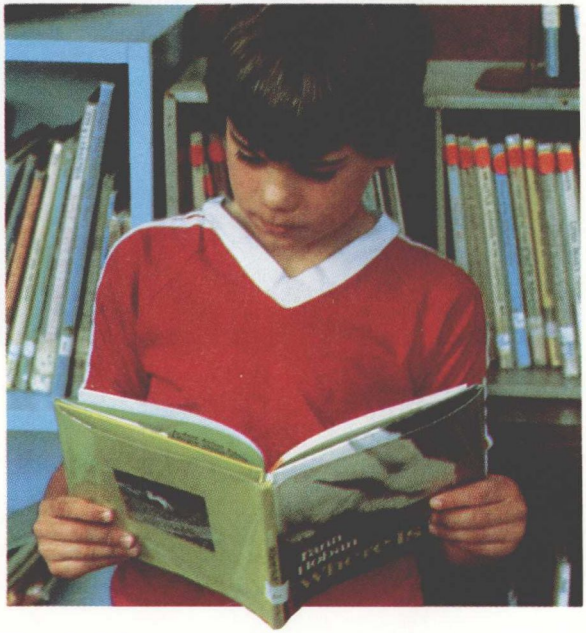
THINK ZONE

If the earth is a giant magnet, why does iron not stick to the earth?

1. **Think Zone** appears once in each lesson. It is always in the margin.
2. **Think Critically!** appears at the end of each lesson.
3. **Think About It** appears in the Technology Today at the end of each chapter.
4. **Problem Solving** always appears at the end of each chapter.

You will need to use some information from the lesson to answer these questions. But you will also have to think about what you know. These questions may not have only one right answer.

As you come across questions in *Addison-Wesley Science,* think about where you will find the answers. Remember that you may find some answers in this book and a lot in your head!

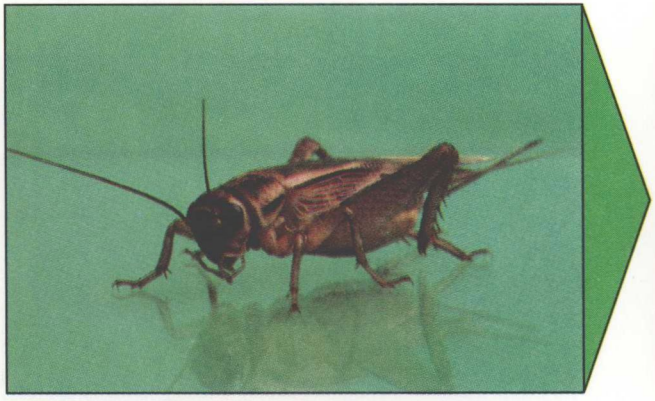


Doing What Scientists Do

Scientists ask a lot of questions. Sometimes the answers are found in books. Sometimes an expert knows the answers. There are also times when scientists may want to check an answer themselves. Then scientists use scientific methods to find the answers.

Two scientists wondered, "How do crickets chirp?" The question was a problem for the scientists to solve. They read some books about crickets. The books said that crickets chirp by rubbing their wings together. The scientists decided to check this idea. The pictures show the scientific methods they used.

Throughout this book, you will find many problems to solve. You will use scientific methods to find the answers.



1 Problem

How do crickets chirp? The scientists guessed they rub their wings together. This guess is a hypothesis.

2 Experimenting

The scientists put ten crickets in special jars. They used their eyes and ears to observe the crickets for one week.

You probably wonder about many things. You are like a scientist. You may have questions that are not answered in your textbook. You may find the answers in other books. Sometimes your teacher will know the answers. Or you might ask a scientist. Sometimes you can use scientific methods to find the answers.

Finding the answer to one question may bring up another question. These scientists observed that some of their crickets never chirped. They wondered why. That was another problem to solve. How do you think they found the answer?

Whenever you think about science, do not be afraid to ask questions. Then think about where you can find the answers.

3 Recording Data

Whenever the scientists heard a cricket chirp, they watched closely. They wrote down the time and what they saw.

4 Drawing Conclusions

The scientists decided their data supported their hypothesis. Each chirp, a cricket rubbed its wings together.

Safety in Science

Scientists are careful when they work. You need to be careful in science too. Here are some safety tips to remember.

1. Before you do an activity, make sure your teacher says it is okay to do it. Read all the directions before you start. If you do not understand them, ask your teacher for help.

2. As you do the activity, follow the directions carefully. Obey the safety notes where you see a ◇. Tell your teacher if you make a mistake.