

This Teacher's Manual and Answer Key supports the 1998 edition of *Science and Living in God's World, Grade 2*, the text which was revised from the original Lippincott edition to reflect Roman Catholic perspectives on science and to include current scientific information.

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TEACHER'S MANUAL & ANSWER KEY

SCIENCE AND LIVING IN GOD'S WORLD GRADE 2

TEACHER'S MANUAL AND ANSWER KEY

Introduction

This teacher's manual supports the text, *Science and Living in God's World Grade 2*, 1998 edition, printed by Lepanto Press. It is intended as a guide for the parent to further explain and elaborate upon certain concepts presented in each unit. It is also an answer key. This booklet includes most answers for the questions found throughout the text, as well as those in the Things to do and the Things to Think About sections at the end of each unit. Responses for those questions which evoke very subjective answers, especially those particular or unique to the individual child, will not generally be provided in this guide, and will bear the caveat: "Student answers will vary."

To get the most from this Teacher's Manual, it is recommended that the parent or in-home tutor who will be conducting the lesson read over the relevant portion of this guide prior to conducting the lesson. All page numbers given will refer to either the Textbook or to this Teacher's manual. For pages to be read in the Textbook, the word "Text" will appear in parenthesis after the page number, while "TM" will appear after page numbers from the Teacher's manual. Some of the information presented in this guide is for background purposes only, while other information can be best utilized by sharing it with the child. In this latter category can be placed the coloring pictures, which are placed throughout the guide. Most of these pictures have been designed to be colored by the child, while teaching the student more about some of the animals, plants, or topics pertinent to the unit content. The captions should be read and explained by the parent to the child.

The course work will start off somewhat slowly, and will only be presented once a week (Tuesdays) through the first quarter. Beginning in the second quarter, however, more pages will be covered each week, along with more concepts being introduced. Additionally, at that time, weekly readings from the Nature Reader, *Animal Life*, will be accomplished on Thursdays. If, at any time, the work appears too slow for your second-grader, we encourage you to check out from your local library science-related books (e.g., animals, plants, astronomy, etc.) of interest to your child. Some limited time introducing your child to the scientific information available on the internet might also be both useful and enjoyable. If you are interested in science-related web sites, you can:

- a. do a web search with key words of what you are looking for (e.g., in Unit 4, which deals with the sun, you could search for "solar images," or "sunspots" or the like);
- b. check a library or book store for one of the many books on educational web sites;
- c. call Our Lady of Victory's Educational Advisor, who is compiling web site addresses for an upcoming OLVS publication on how homeschoolers can profit from integrating information found on the internet with their home study curricula.

Finally, in keeping with the Church's teaching on education (to wit, that our Holy Faith illuminates our understanding of the various academic subjects, since the Catholic Faith is at the heart of every subject in the curriculum), scriptural verses and Catholic commentary are provided in the textbook before the opening of each unit. It is strongly recommended that these scriptural verses (from the Douay-Rheims Bible) and the Catholic commentary at the beginning of each unit be read and explained by the parent to the child. We wish you and your child a rewarding year in the pursuit of science.

UNIT 1

ALL ANIMALS DEPEND ON

PLANTS FOR FOOD

UNIT OBJECTIVE

To understand that all animals on earth depend upon plants, either directly or indirectly, for their food.

UNIT BACKGROUND

All of God's creation consists of various and diverse types of living things. After Linnaeus devised a system for classifying all living things at the beginning of the 19th century, scientists were fairly content (until recently) with placing all living things into one of two categories: plant or animal. But, there were always unusual creatures which didn't fit into either, or even appeared to be both.

Biologists have now divided all of God's creation into five "kingdoms." This allows for those strange creatures (many single-celled organisms, bacteria, yeasts and molds, and mushrooms, as just a few examples) to be more logically classified.

Still, with the exception of organisms such as the *euglena*, which has characteristics of both plants and animals, we can look at just about any living thing as either a plant or an animal.

The beauty of God's plan for green plants is that they make their own food from the sun. *Photosynthesis* keeps them nourished and growing. (White plants such as mushrooms, on the contrary, get their food from the decaying organic matter to which they are attached.)

Although we rarely think about it, it is a fact that animals depend on green plants for nearly all their food. Since green plants do provide us with practically all of our food, we can trace the source right back to the sun – an idea which we will touch on later in this course.

We humans are dependent upon plants for our very existence – for the oxygen in the air we breathe, for many of the clothes we wear, and for

the food which we eat. It is easy for us to see this when we eat things in the form of plants or plant matter (vegetables and fruit), or even directly made from plant products (bread from wheat). But we rarely reflect on the fact that the delicious T-bone steak comes from a steer which has grazed on grass or plant products, or that Buffalo wings come from chickens which eat seed and other plant products.

While it is not necessary to go into the details of how animals are processed for beef and poultry production, for example, it would be a good idea for second-graders to realize that God's bounty from which we draw does include the animals as well as the plants. For the purposes of this unit, however, the student should recognize to what extent we depend upon plants in nearly every way.

WEEK 1

Discussion

Ask the child to read the title of the unit. Ask, "What do you think we will be talking about in this unit?" After the student responds, explain that we will learn about how animals and human beings depend so much on plants. Use an example, starting with the final product (milk, for instance), and tracing it back.

"Where did the milk come from?"

"A cow."

"What does the cow eat?"

"Grass."

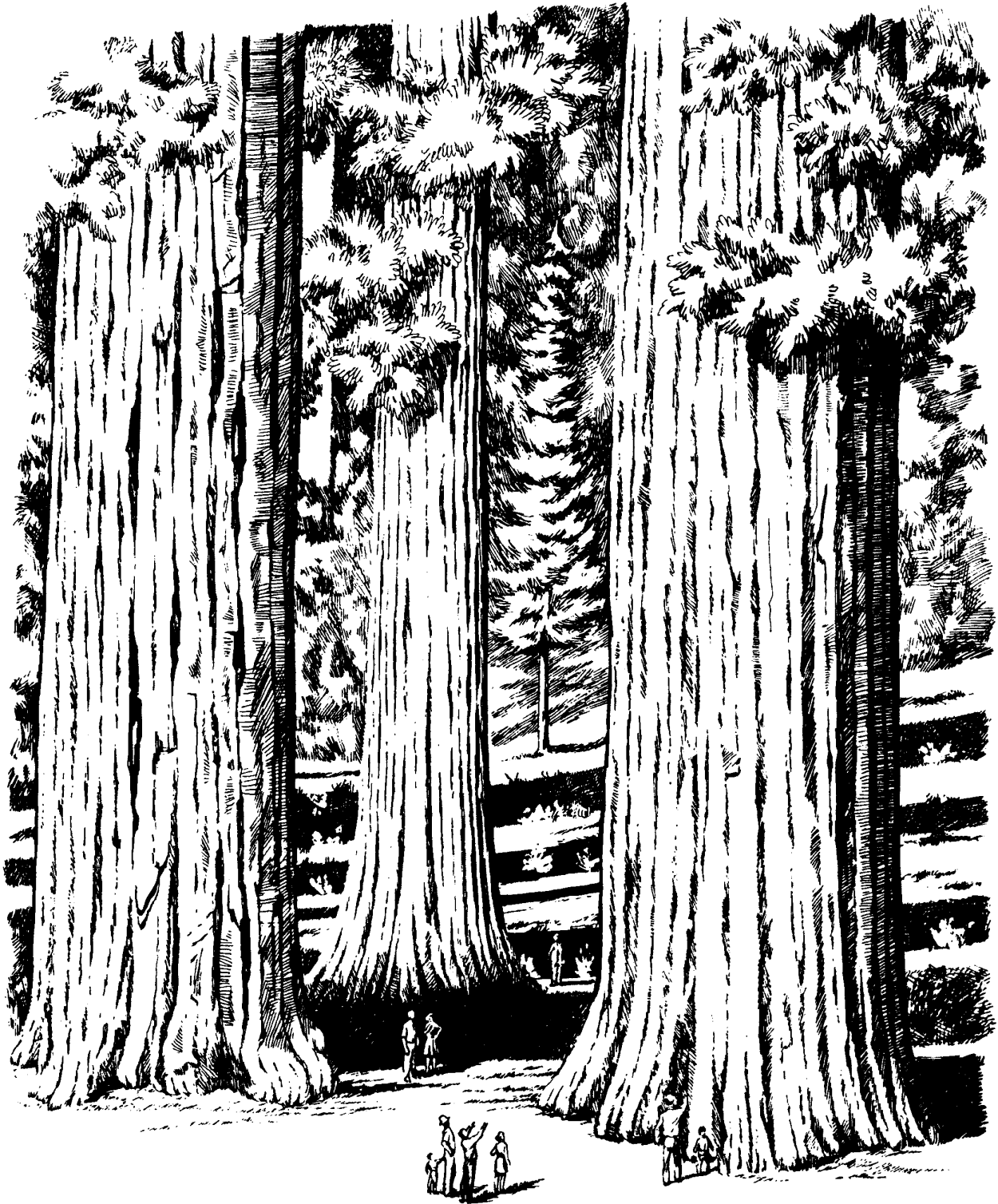
And so forth. Explain how we eat plants (vegetables and fruit) and meat (which comes from animals that eat plants).

Have student read pages 9 and 10 (of the Text). **In this and all subsequent lessons, you may want to assign the pages to be read quietly by the child first, before the student reads them aloud to you.**

After the student reads page 9 and the top part of page 10 aloud, read and discuss with the child the *Learning About Plants* section, asking the student the questions at the end of the page.

Show the student the picture of the giant sequoias at Sequoia National Park on p.2 (of the

teacher's manual, TM). Read the caption to the child. Discuss the idea of three thousand year-



Sequoia National Park, California. This is America's second-oldest national park, created in September 1890 and originally called General Grant National Park. In 1940, its 400,000 acres became part of Kings Canyon

National Park. The giant sequoia trees shown here can live to be over 3,000 years old and can grow to over 300 feet in height. Visitors enjoy camping, day hikes and back-packing, but are cautioned to beware of rattlesnakes.

old trees. Explain, for instance, that these trees may have been alive when Our Lord walked the earth. Elaborate on how tall 300 feet really is, relating it to your house (every story of a building is roughly ten feet) or some other feature with which your child can identify.

Activity

If desired and if time allows, have the student color the picture on page 2 (TM), or draw freehand a picture similar to it.

WEEK 2

Discussion

Have student read pages 12 through 17 (Text). After the student reads these pages aloud to the parent or in-home tutor, read back over them again with the child, this time asking questions or giving commentary on the text's passages.

Page 12 (Text): Covering the pictures, ask: "What plants can you think of which are green when they are growing?"

Possible answers will include vegetables, berries, flowers. You can challenge the student to be specific with a type or species, such as "corn," "raspberry," or "marigold."

You may want to introduce to the child the idea of photosynthesis by explaining that the green material helps the plant to make its own food from just the sun, and water. *Chlorophyll* is the green matter in plants which helps them to make their own food from sunlight.

Page 13 (Text): Covering the picture, ask, "Can you think of a plant that is not green when it is alive?"

The student will most likely mention mushrooms or toadstools. If he has trouble thinking of such a plant, let him see the picture on p. 13 (Text). Explain that the lack of green matter in the plant usually means that it does not make its own food from sunlight. It must get food somewhere, so most such plants get their nourishment from decaying plant matter.

Plants can also be classified according to how they produce more plants like themselves. They can be divided into those that have seeds (these almost always have flowers) and those that produce

offspring from spores (these almost never have flowers). Spores are small pockets of material which, when they land on soil which is wet and warm enough, form new plants like the ones which dropped them. They come from underneath the mushroom cap, for example, or they can be seen as small black bumps growing on the underside of ferns.

Finally, plants can be divided according to whether they live only for one year, or whether they live for many years. Plants that only live for one year (such as marigolds and tomatoes) are called *annuals*. Plants that live for many years (such as strawberries, trees, and chrysanthemums) are called *perennials*. A small number of plants (like carrots) live for two years and are called *biennials*.

Trees are an example of a perennial which can be further divided into groups of those that drop their leaves each fall (*deciduous*) and those that do not (*evergreen*). Most deciduous trees have flat veined leaves, while most evergreen trees are cone-bearing or *coniferous*, such as pines and firs. One exception to this rule is the Western Larch Pine, also called Tamarack. It has short needles which turn golden-yellow in the Fall and drop to the ground.

The child should be able to tell at least two ways by which we can classify plants: whether they make their own food or not, whether they are seed/flower bearing or spore bearing, and whether they are annual or perennial.

Show the student the picture of the Great Horned Owls on p. 4 (TM). Point out the tree in which the owls have built their nest, and ask the student to classify it with anything he can tell you about it. He should be able to mention two of the following: that it appears to be a pine tree; that it is green and therefore makes its own food (using sunlight); that it is an evergreen and lives for many years; and that it makes new pine trees by dropping seeds from its cones.

Activity

If time allows, have the student color the picture on page 4 (TM), or draw freehand a picture similar to it.



Sands Point Preserve. Built in the early 1900s, this former estate of the Goulds and Guggeneims offers changing exhibits in palatial buildings and 216 acres of grounds, including self guiding nature trails. It is operated by the Nassau County Department of Recreation & Parks. Address: 95 Middle Neck

Road, Sands Point, NY 11050. Phone:571-7900. When to visit nature trails: daily, 10 to 5.

The great horned owl (*Bubo Virginianus*), brown with a white throat "bib", is seen nesting in an Eastern white pine (*Pinus strobus*).