SOIL CONCEPTS

IMAGINATION BOOK

THE RESOURCE

SOIL: It's such a common and abundant substance that we often take it for granted. In fact, many people refer to it as dirt, and think of it as something to be avoided. Worse, soil is often treated like dirt.

What do we really know about the soil? Contrary to what many people think it is not a lifeless, uniform collection of clay and rocks. Soil is a complex, dynamic resource. Technically speaking, soil is a mixture of minerals, air, water and organic material–living and dead plants, animals, fungi, bacteria. But that's pretty bland, and masks the real beauty of this resource.

Consider, for example:

- One gram of soil may contain as many as four billion bacteria, one million fungi and molds and 100,000 algae.
- More than 400 different soil types have been identified and mapped in Ohio.
- It may take hundreds or thousands of years for an inch of topsoil to form, depending on parent material, climate, etc. That same inch of topsoil may be eroded away in one or two storms if left unprotected.
- Virtually all of our food, as well as forests products and some medicines are produced directly from soil. In fact, life as we know it could not exist without soil.

We hope this material will help you and your students "DIG IN" and learn more about the soil upon which we all depend!

EDUCATIONAL OBJECTIVES

In the education field we often meet people who are considered the "movers and shakers." These are the educators who strive to develop innovative and exciting approaches to helping students learn. They are "designers." They not only recognize that learners have individual needs, skills, interests and experiences, but design activities that address the different styles of learning and thinking. The audio learner who grows through the written or spoken word, the visual learner who gains information by observing and developing mental images, and the kinistic learner who relies on doing and becoming physically involved with the experience are challenged by these educators.

This book was developed to help educators expand their teaching styles and students' learning experiences. The book helps stimulate the imagination. It presents important concepts that increase awareness to life around us while encouraging independent thinking and self-expression. Today, more than ever, there is a deep need for students to understand the total environment and the interdependence of all living and non-living things. We also need independent thinkers who view the world and its problems from various perspectives. Therefore, educators should not be critical of the students' drawings. Accepting their self-expression and allowing students to verbalize their perceptions will increase the potential for developing better problem solving skills in these future decision makers.

For more information about soil and water conservation in Ohio, contact the Ohio Department of Natural Resources, Division of Soil and Water Conservation, 4383 Fountain Square Drive, Columbus OH 43224 OR your county Soil and Water Conservation District:

SOIL CONCEPTS – CONTENTS

1. Soil is commonly referred to as ground, dirt, dust, mud, sand, earth or land. Draw a picture to show how you use one of these forms of soil.

2. Small pieces of rock that have been weathered by wind, snow, rain and sun help make up soil. Show what these sand, silt and clay particles look like to an earthworm living in the soil.

3. Soil is composed of both living and non-living materials. Draw what you might find in a shovel full of soil.

4. Soil is made fertile by the decomposition of plants and animals. Show how bacteria and insects add humus to the soil.

5. Tunnels made by ants, earthworms and other small animals let air into the soil. Draw a picture showing what the soil might look like if you could see into it.

6. Tiny plants and animals living in soil can only be seen with the aid of a powerful microscope. Draw some micro-organisms you might see in soil when looking through a microscope.

7. The soil, along with animals and plants, rests during winter. Show what happens as the soil begins to warm in spring.

8. Plants depend on fertile soil for nutrients and an adequate supply of water to live. Show what your garden would look like if it did not have fertile soil or enough water.

9. People can affect the quality of the soil by what they do to it. Draw things you would use to improve the soil in your garden.

10. People and animals depend on plants to absorb minerals from the soil. Draw a plant you enjoy eating that provides you with minerals.

11. Soil is often called the storehouse of food and water for plants and animals. Draw a picture of a person's storehouse for food and water.

12. Different soils will support different kinds of plants. What crops would you plant if you had a farm with several soil types.

13. The steady pressure of a plant's roots will crack rocks. Show what this sidewalk will look like in 10 years if no one removes the small plants.

14. Roots carry food, hold plants in place and help prevent soil erosion. What do you think the roots of these plants look like?

15. Plants help soften the force of rain on soil. Cracks made by the growth of plant roots help water soak into the ground. Draw some plants growing in these cracks that are helping prevent erosion.

16. Erosion is our most serious soil problem today. Show how this farm family would feel if they lost their soil to wind and rain.

17. Uncovered soil can be blown away by the wind or washed away by the rain. Draw in a variety of plants that would help prevent erosion.

18. Rows of trees are often used as windbreaks to prevent the wind from carrying away the soil. Show how farm animals and wildlife use the windbreak to keep warm in winter.

19. Raindrops falling on bare soil break particles loose and the water becomes muddy. Besides plants, what other ways do people cover the land to prevent raindrops from splashing directly onto the soil?

20. Conservation tillage saves soil, toil and oil. Draw some things a farmer can do with these savings.

21. This farmer planted corn, wheat and hay in strips across the hillside to slow down water runoff and reduce soil erosion. Show what this field will look like after the crops have started to grow.

22. Water running off the land too rapidly washed the soil away, creating this big gully. If you owned this land, how would you prevent erosion on the other hill?

23. Farm ponds are often made by building a dam or dike across a gully to trap water. Draw some other uses a family can make of their pond.

24. Different structures are used to control erosion by allowing runoff water to flow into a stream without creating a gully in the field. Draw animals and plants living along a stream that need clean water.

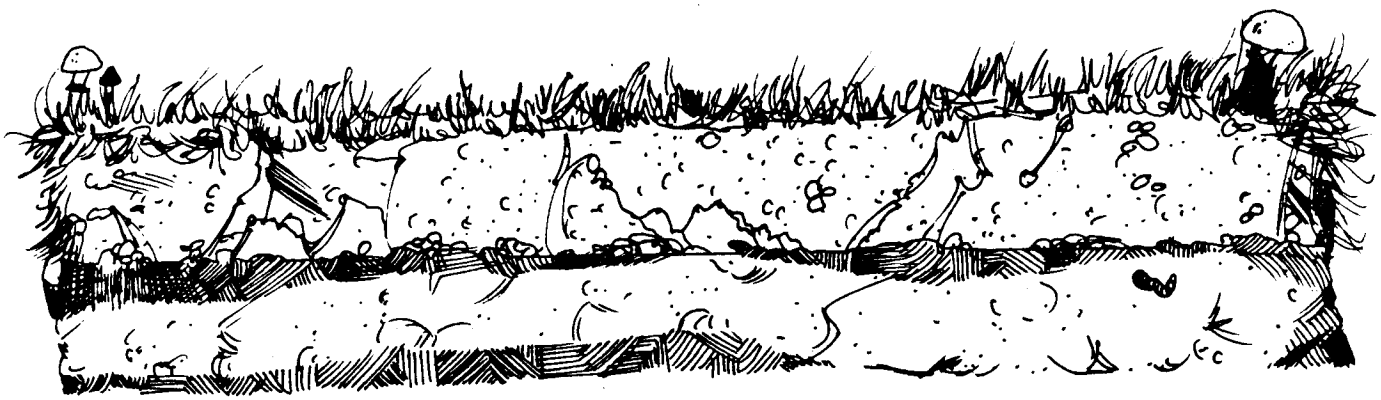
25. Water runs off hills rapidly, often carrying soil. If you were this builder, show how you would slow the water down to help prevent erosion.

26. Removing unwanted soil that has been deposited by erosion costs money and time to remove. Show how you would clean up a stream or lake where soil has been deposited.

27. Motorcycles and mini-bikes can be fun, but will cause soil erosion and compaction. Draw ruts and tracks made by these vehicles.

28. Soil becomes compacted and is removed as people and animals walk over the land. Draw a playground where children have worn paths and compacted the soil.

29. Knowledge of soil characteristics is important when planning to build homes and stores. Draw buildings you would build if you were a contractor.



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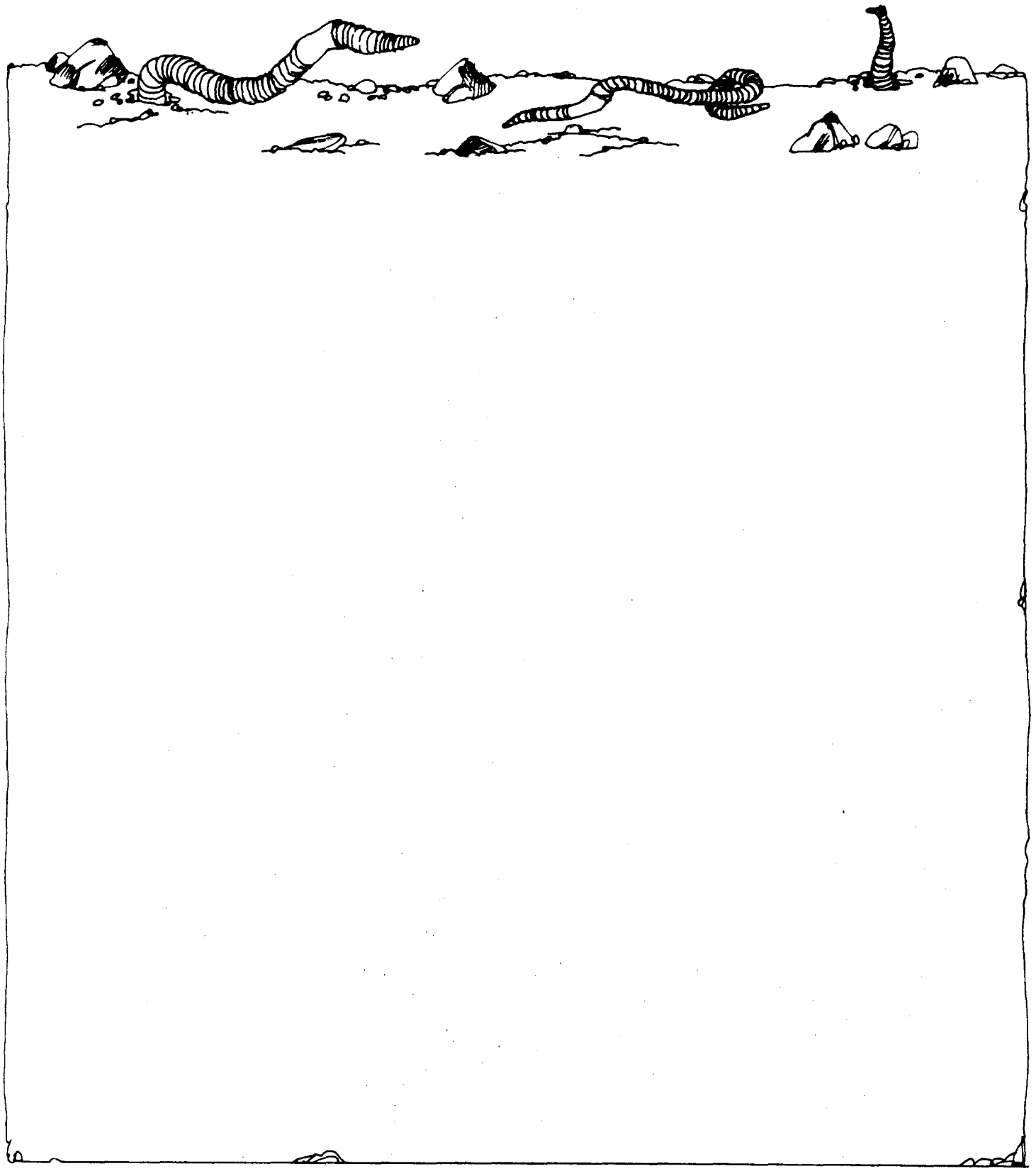

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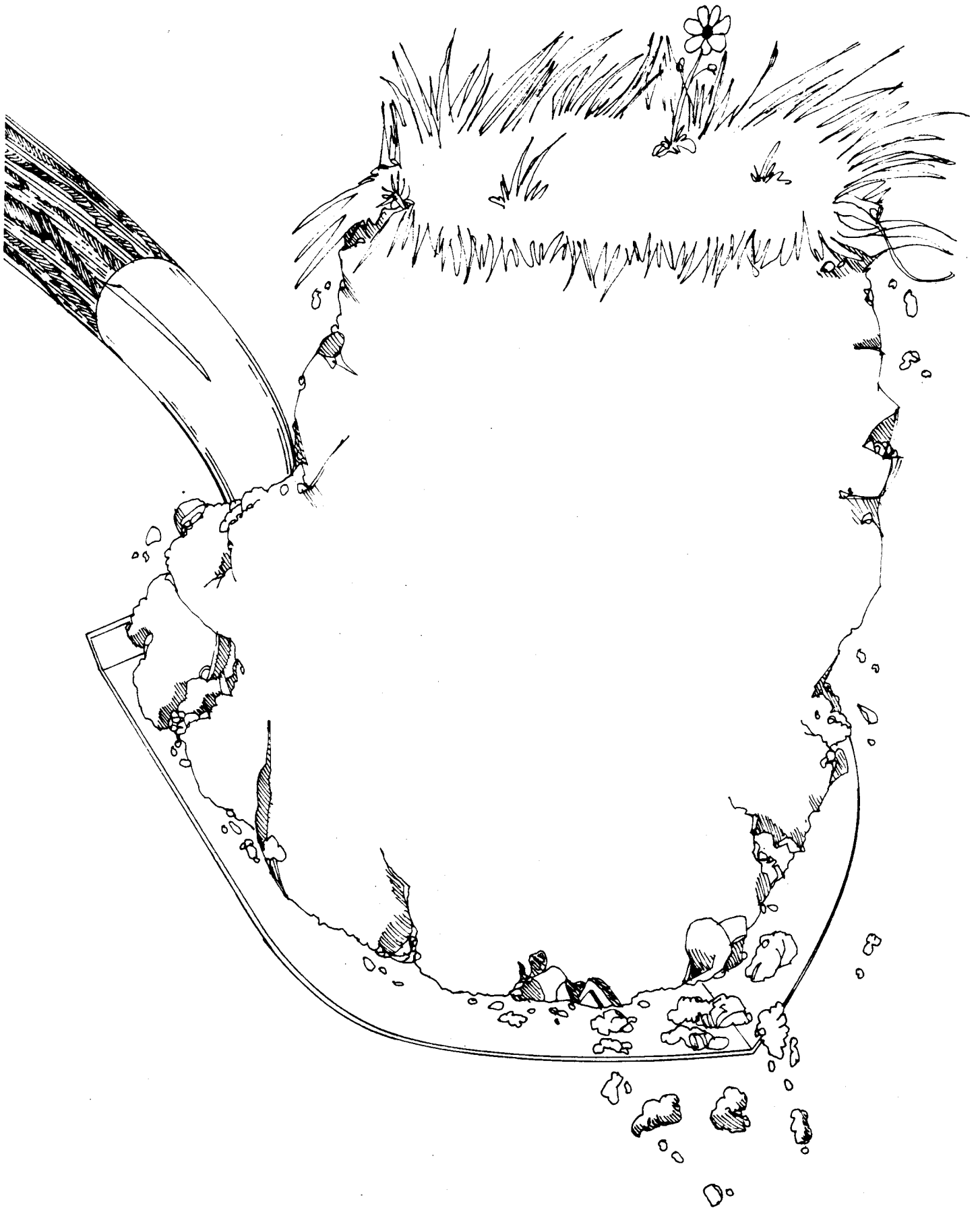

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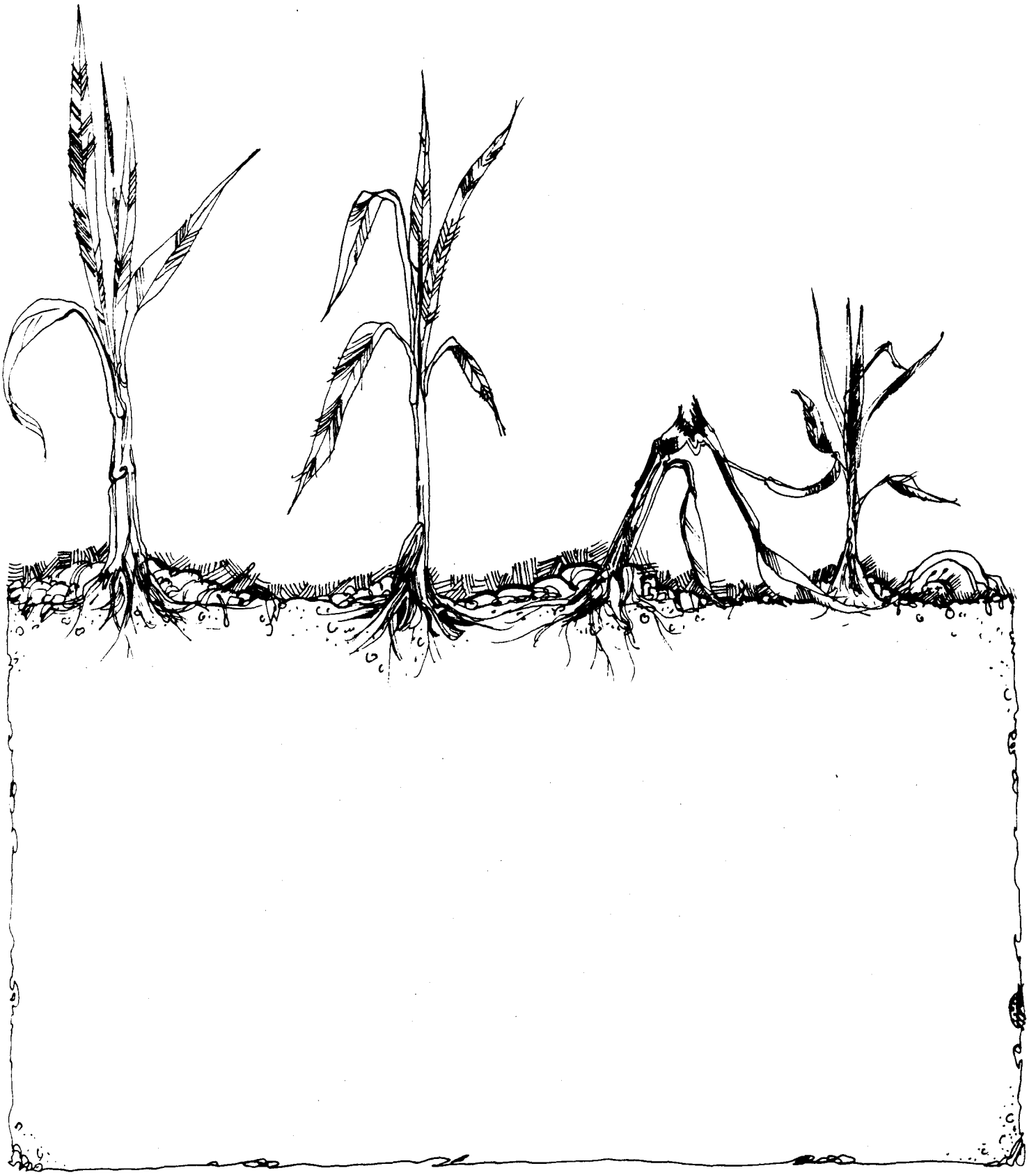

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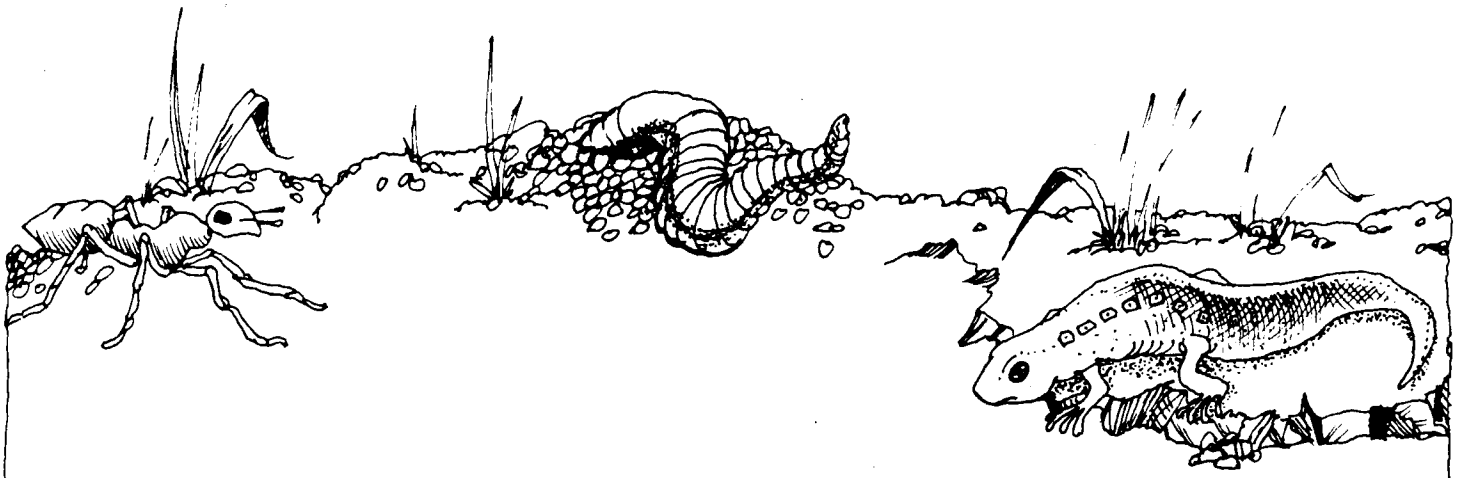

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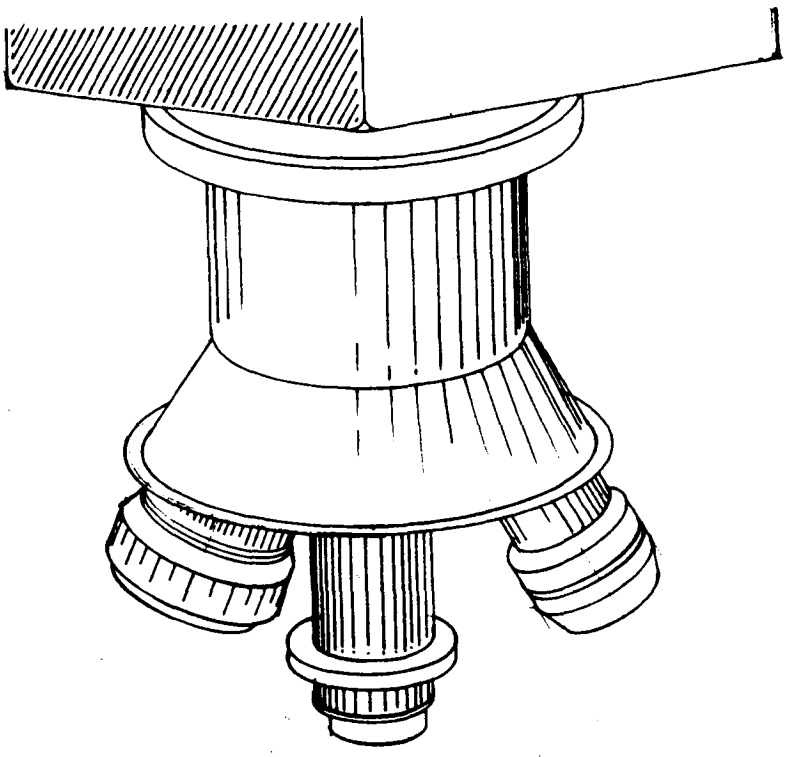

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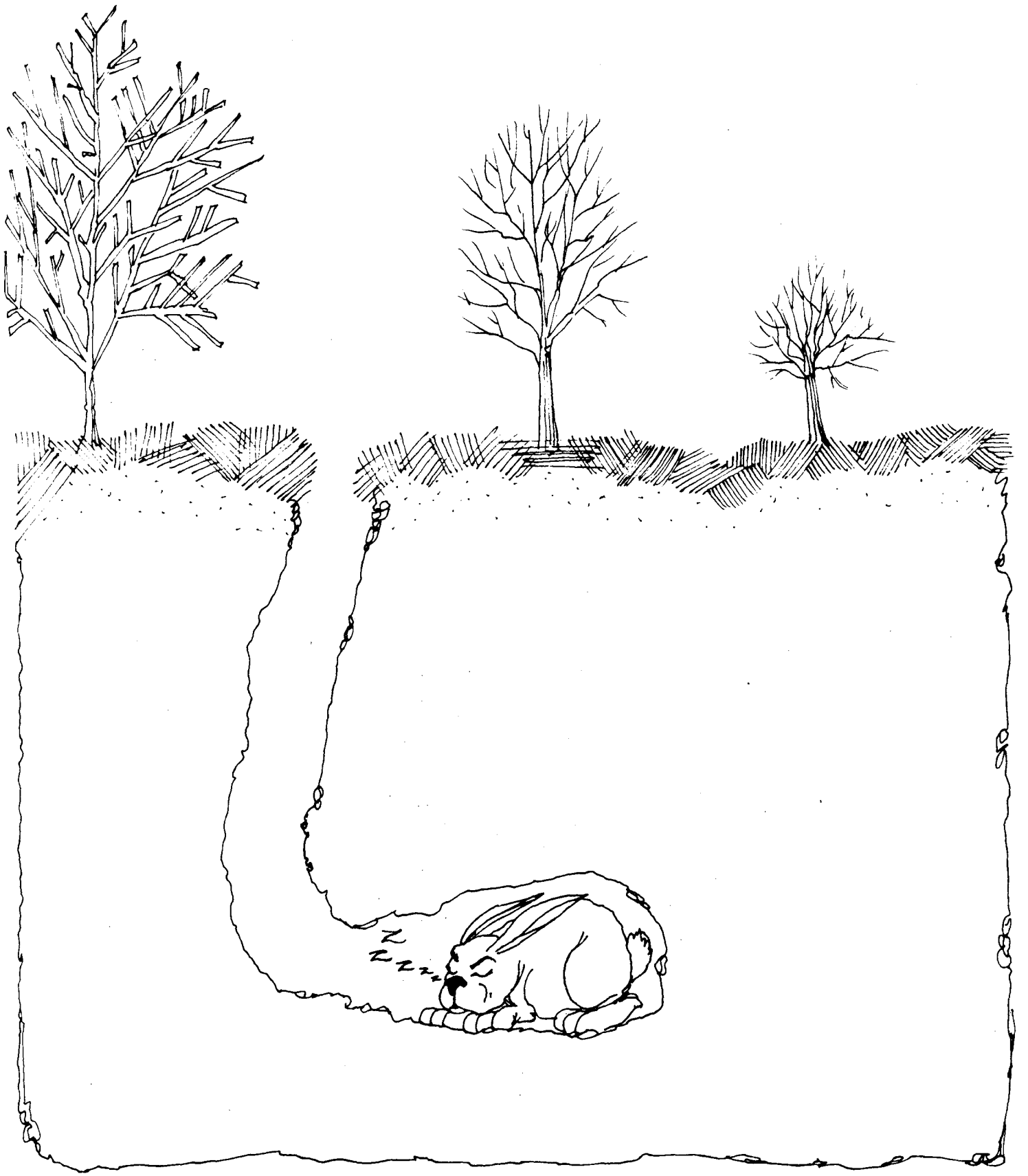

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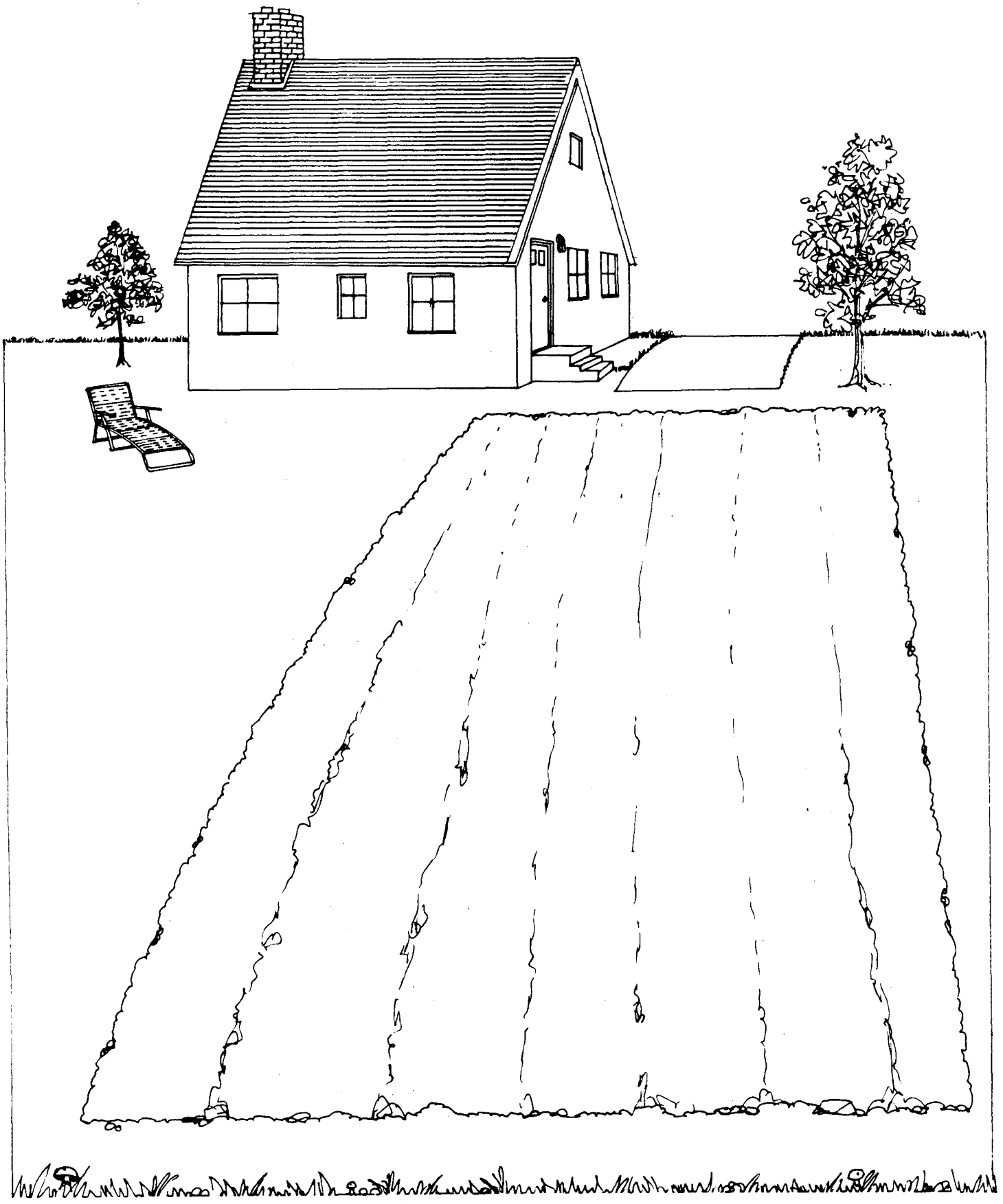

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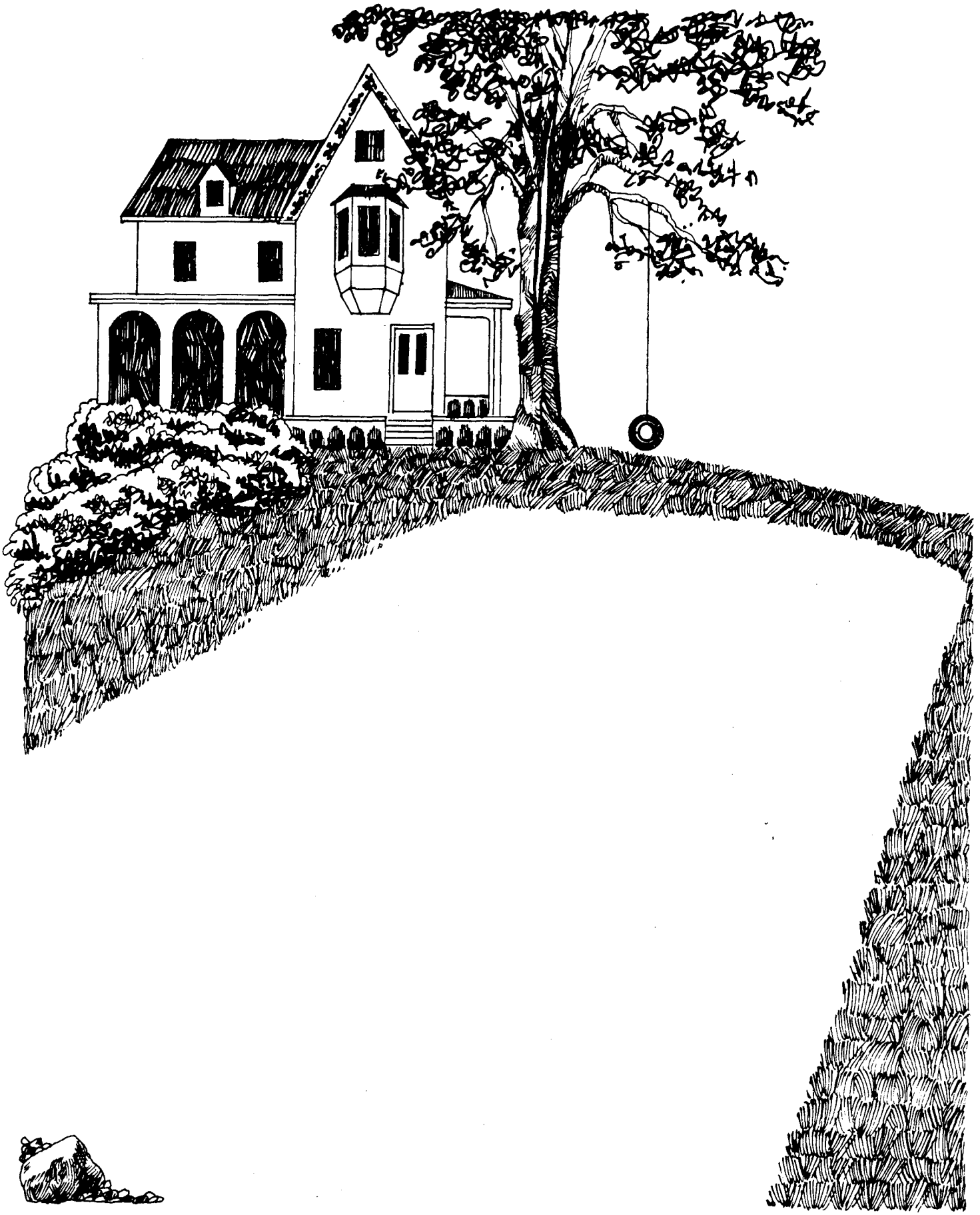

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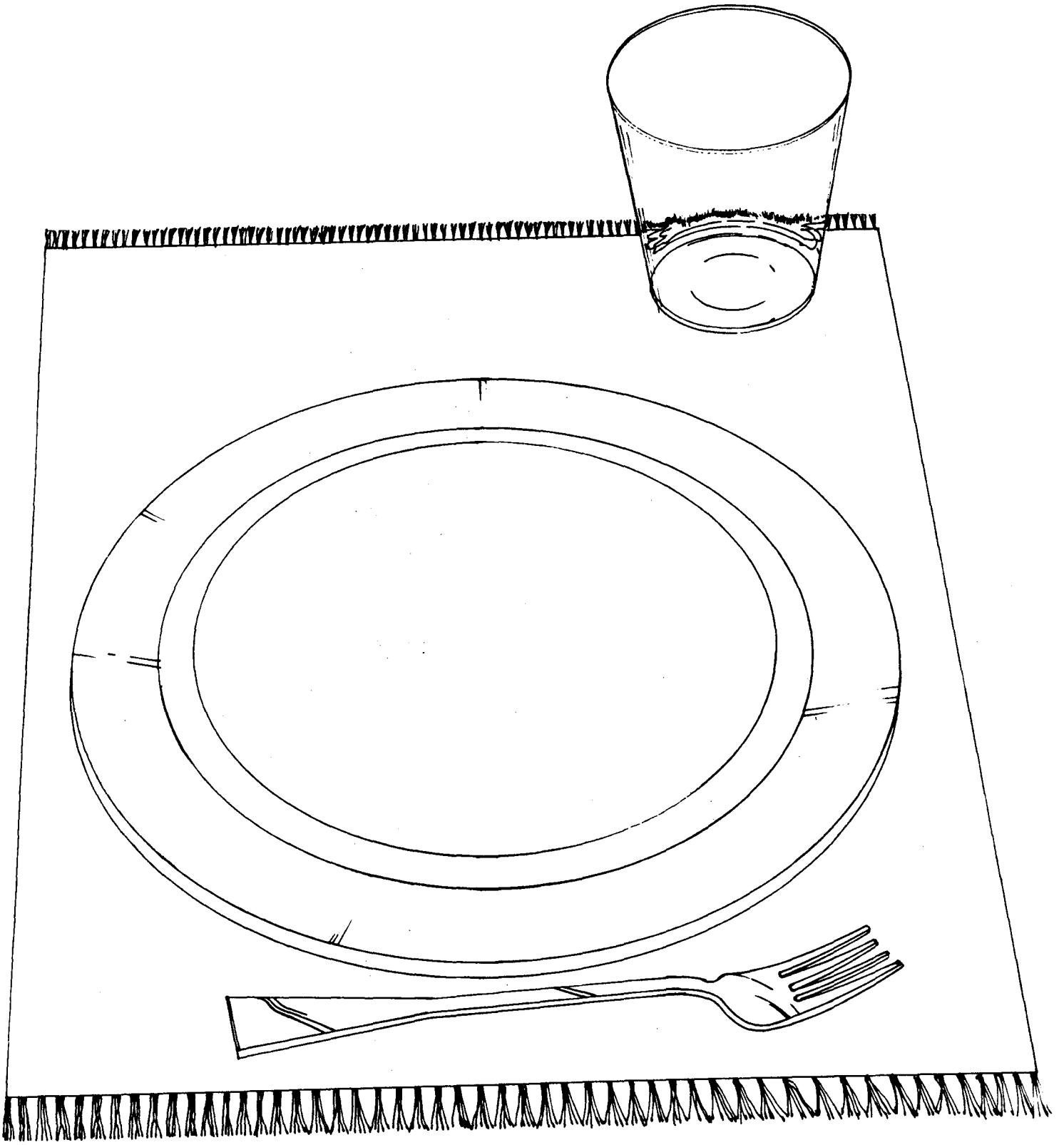

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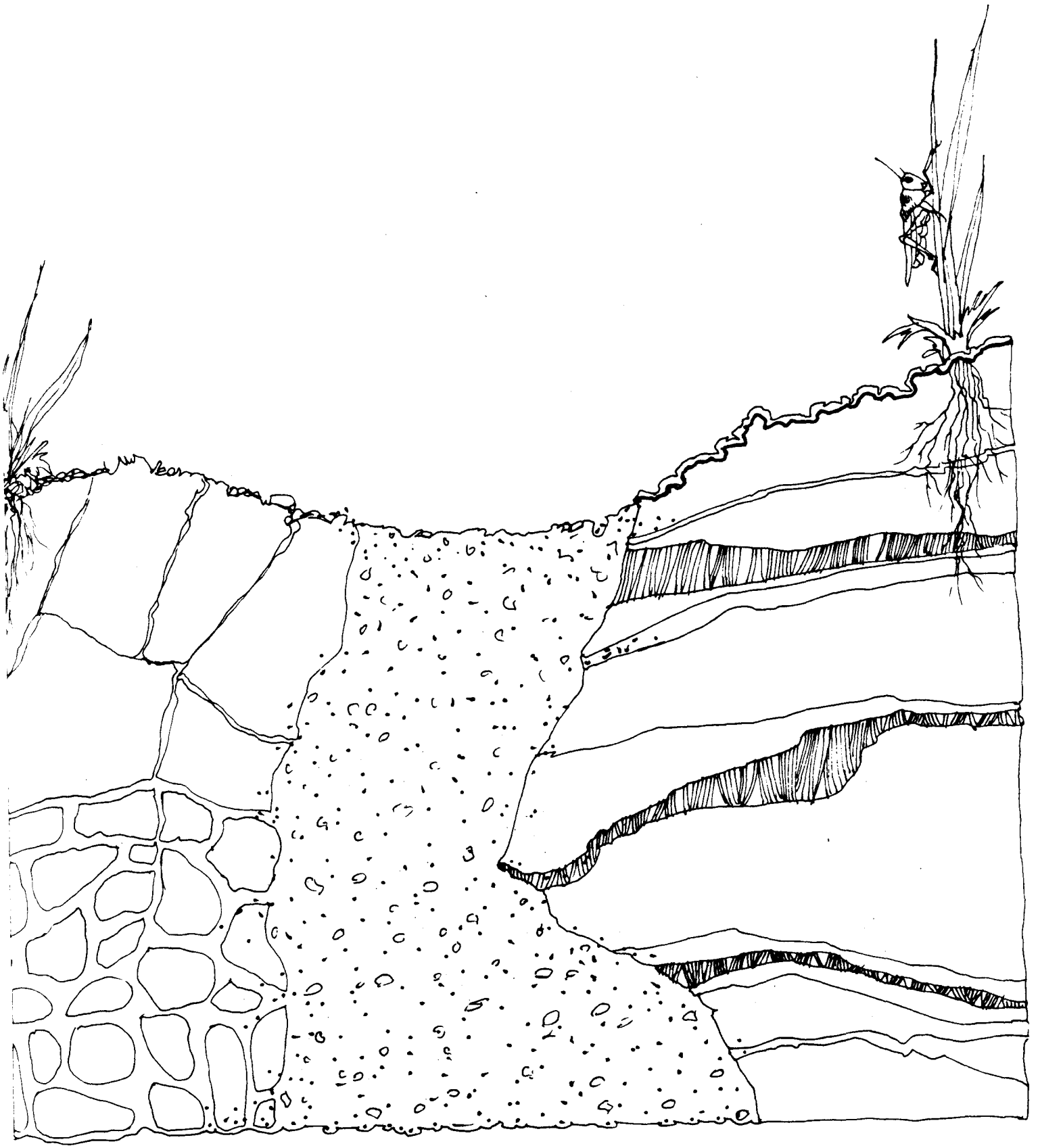

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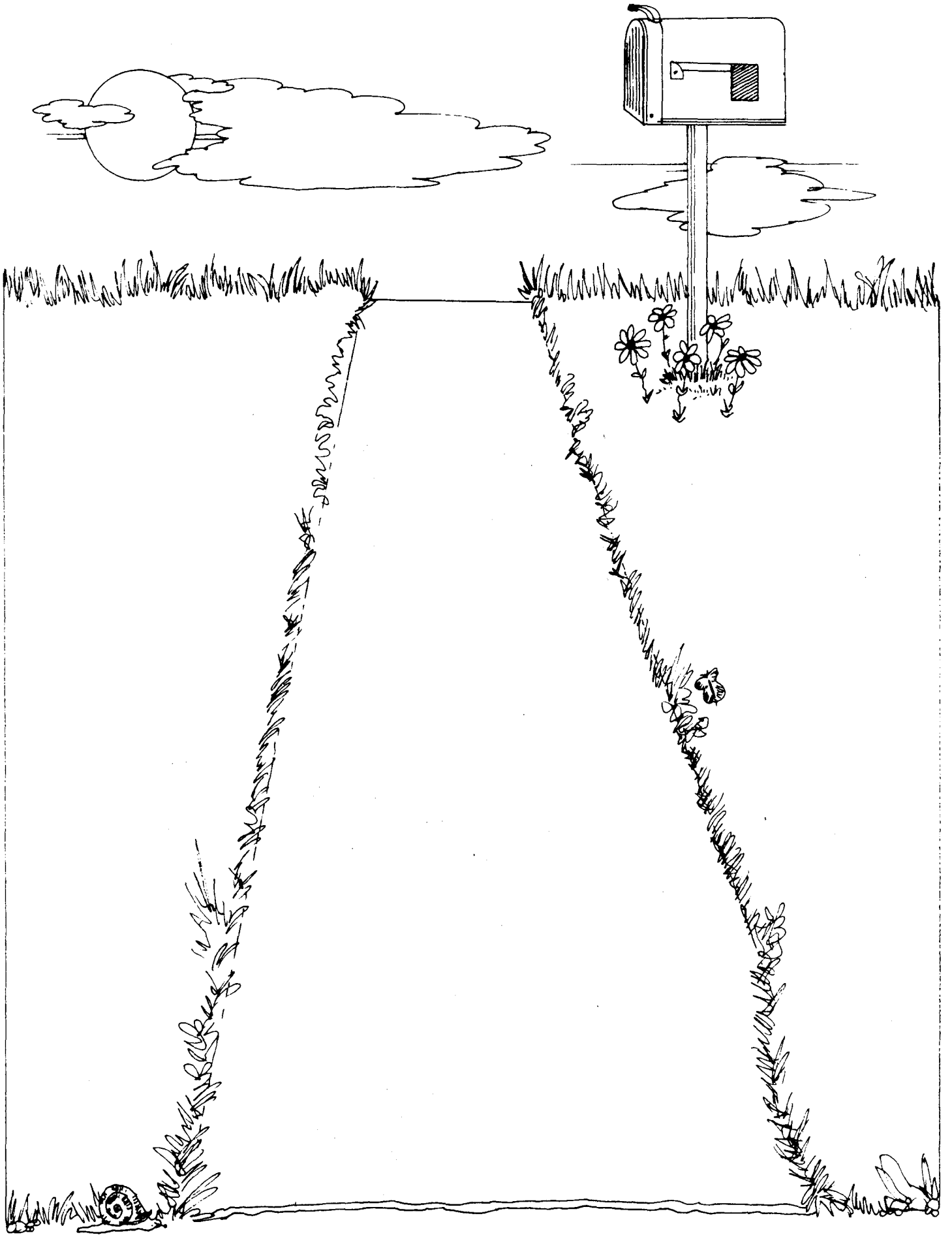

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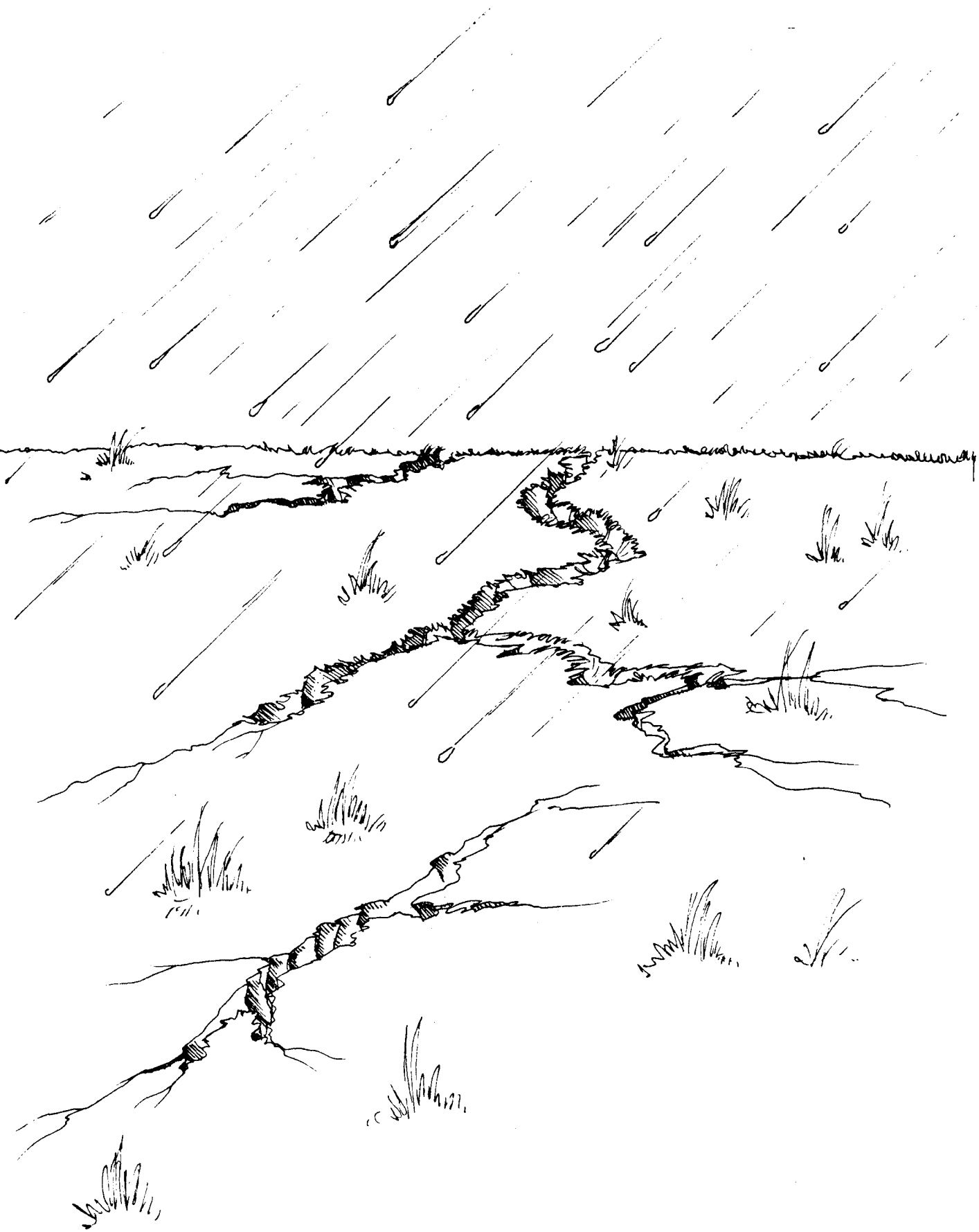

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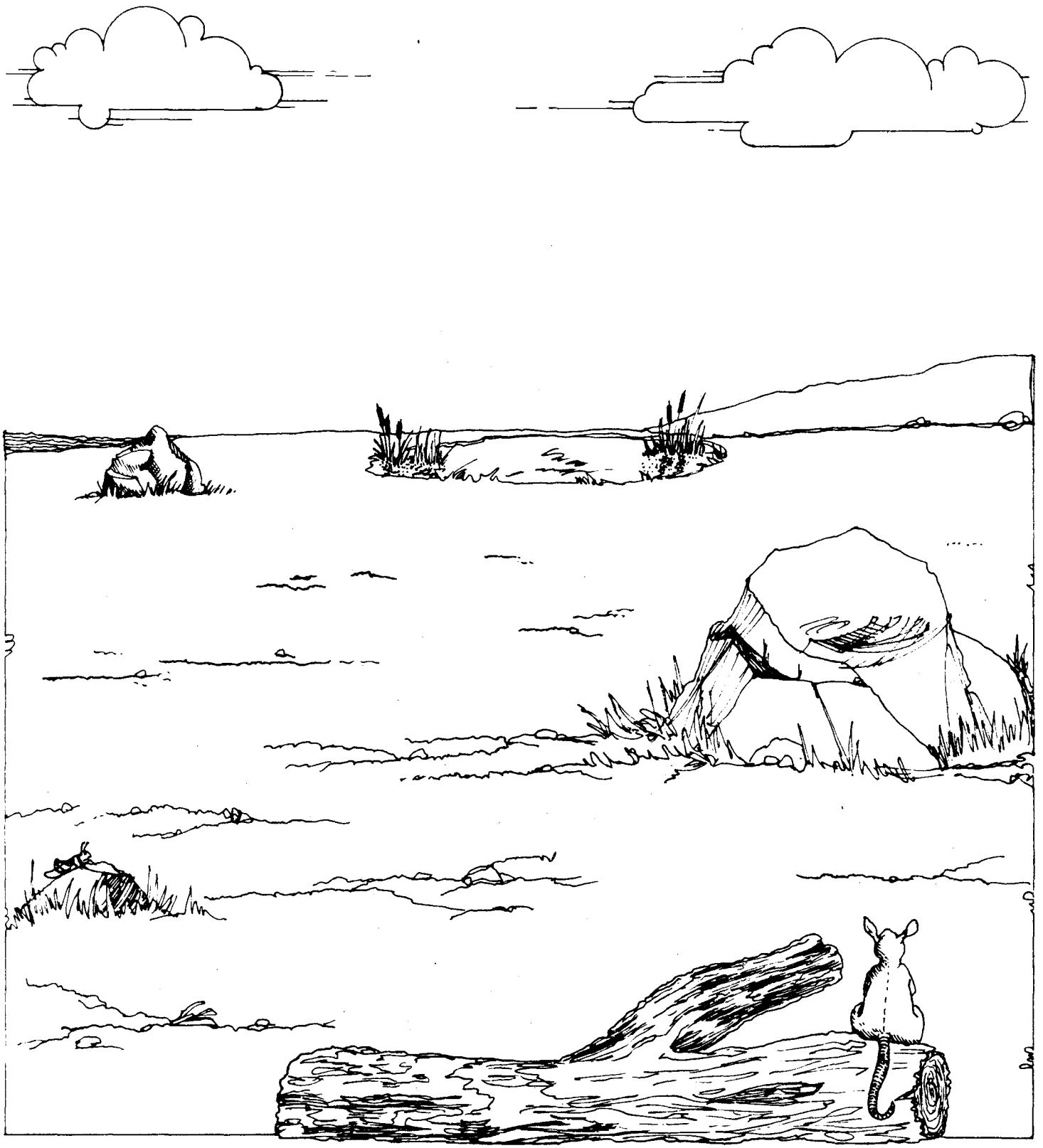

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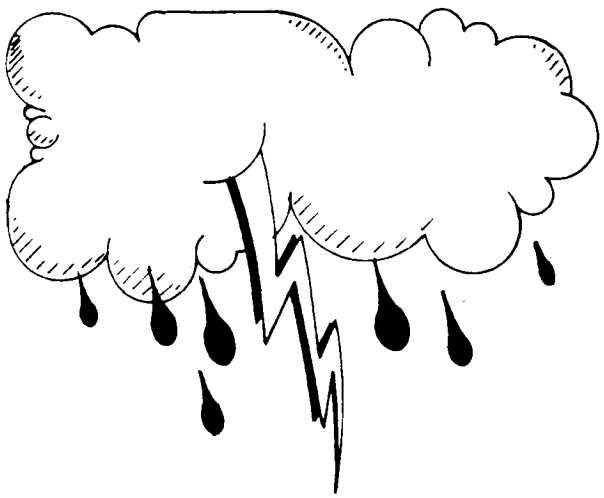

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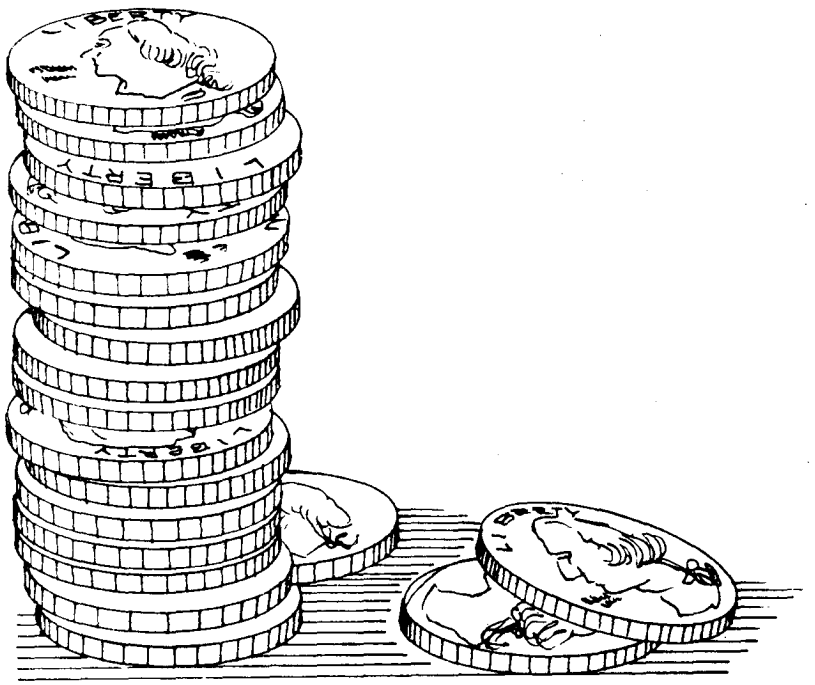

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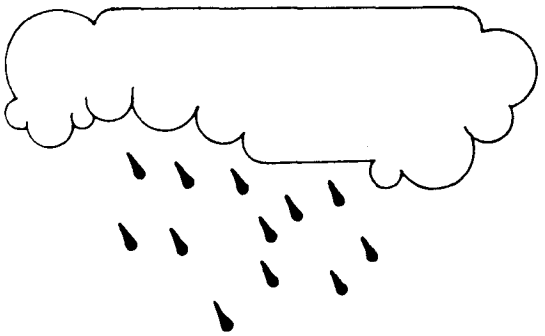

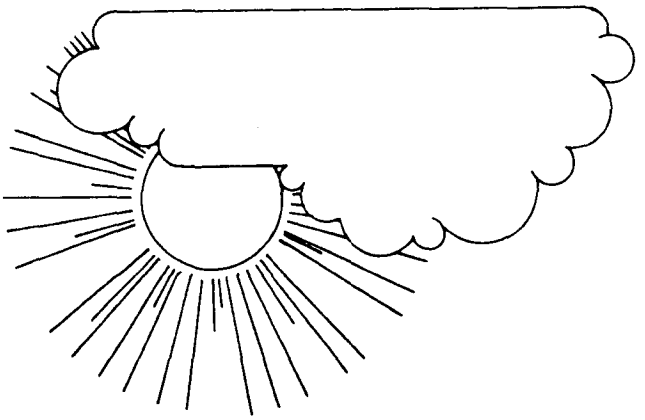

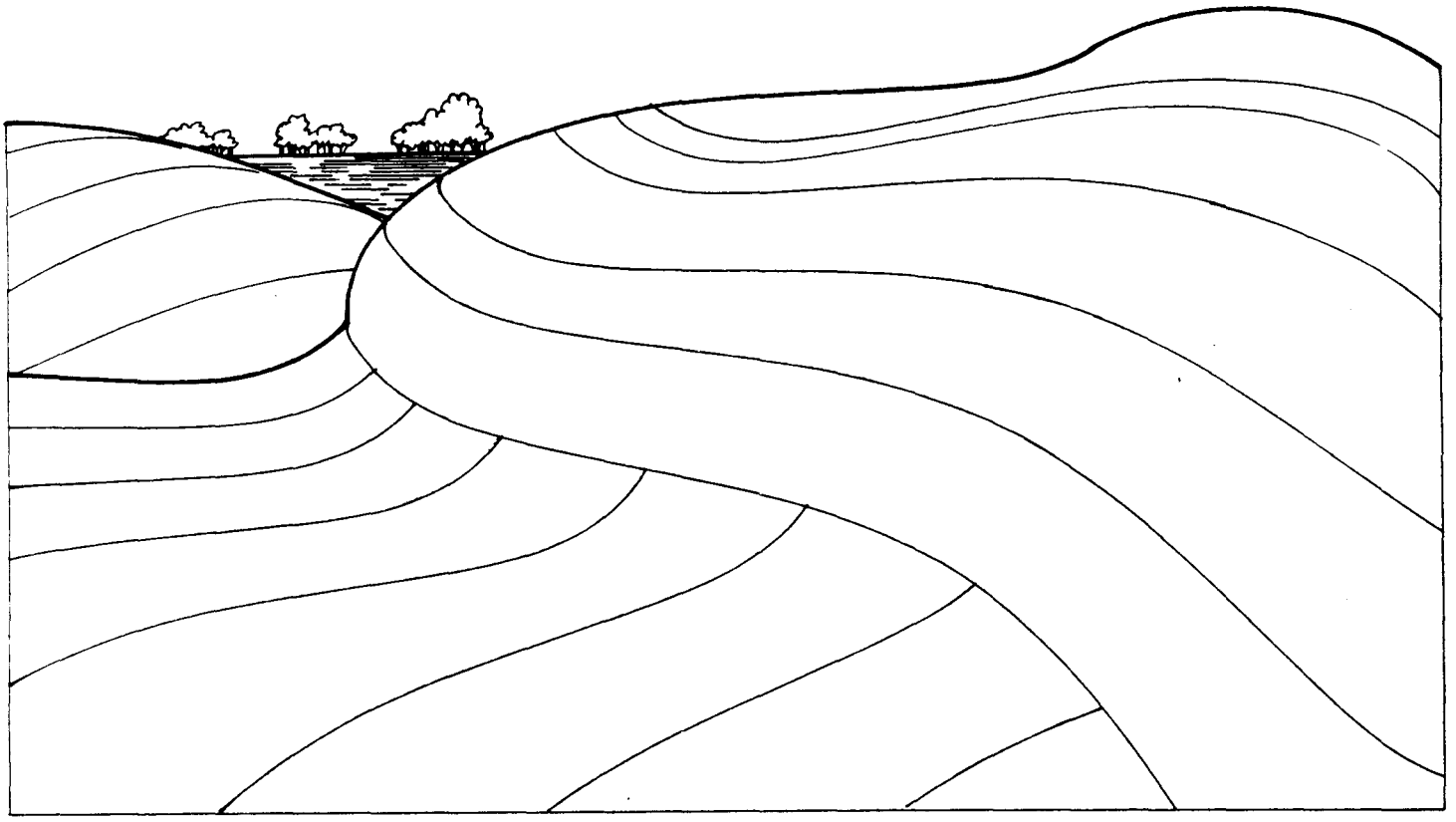

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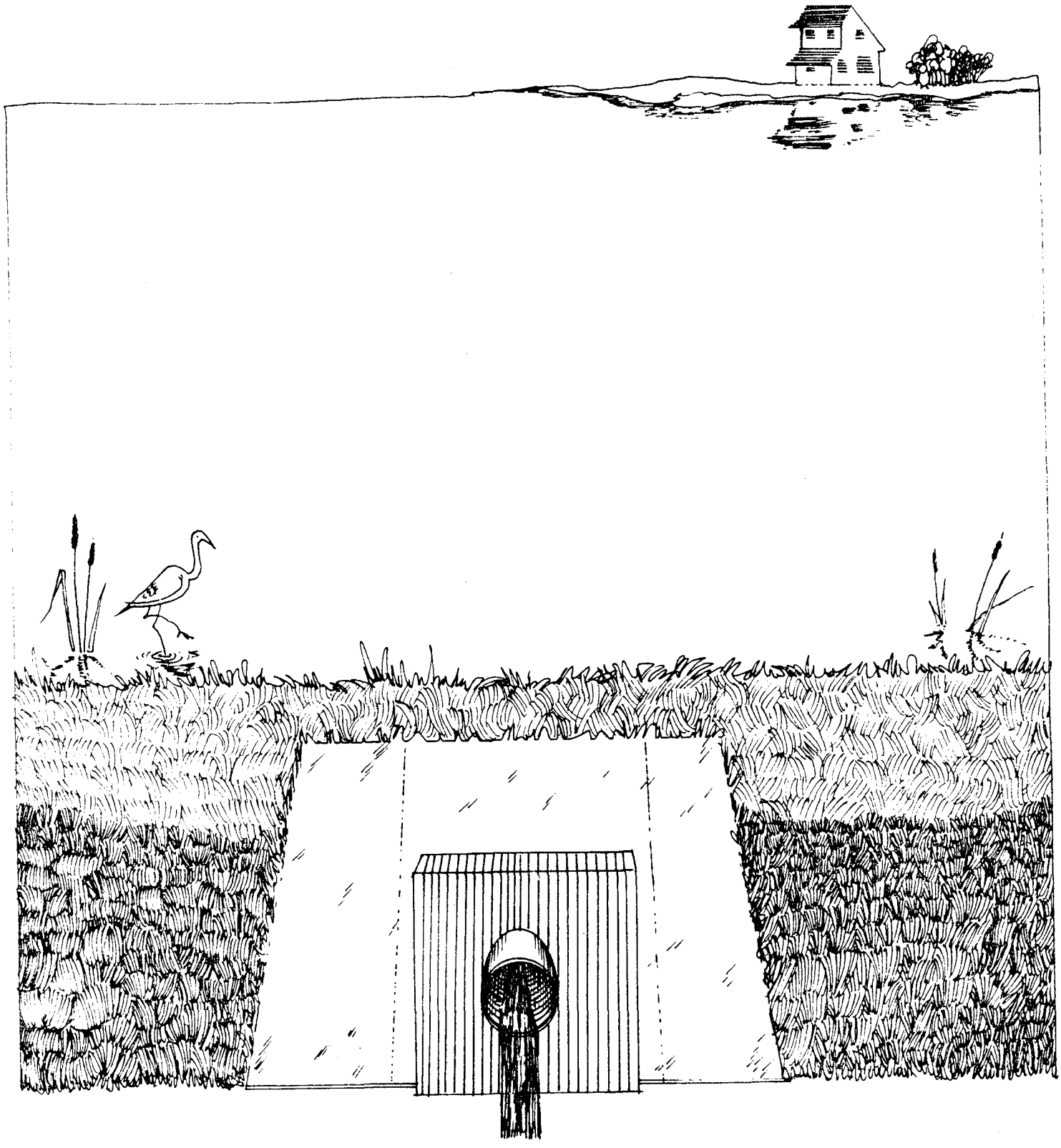

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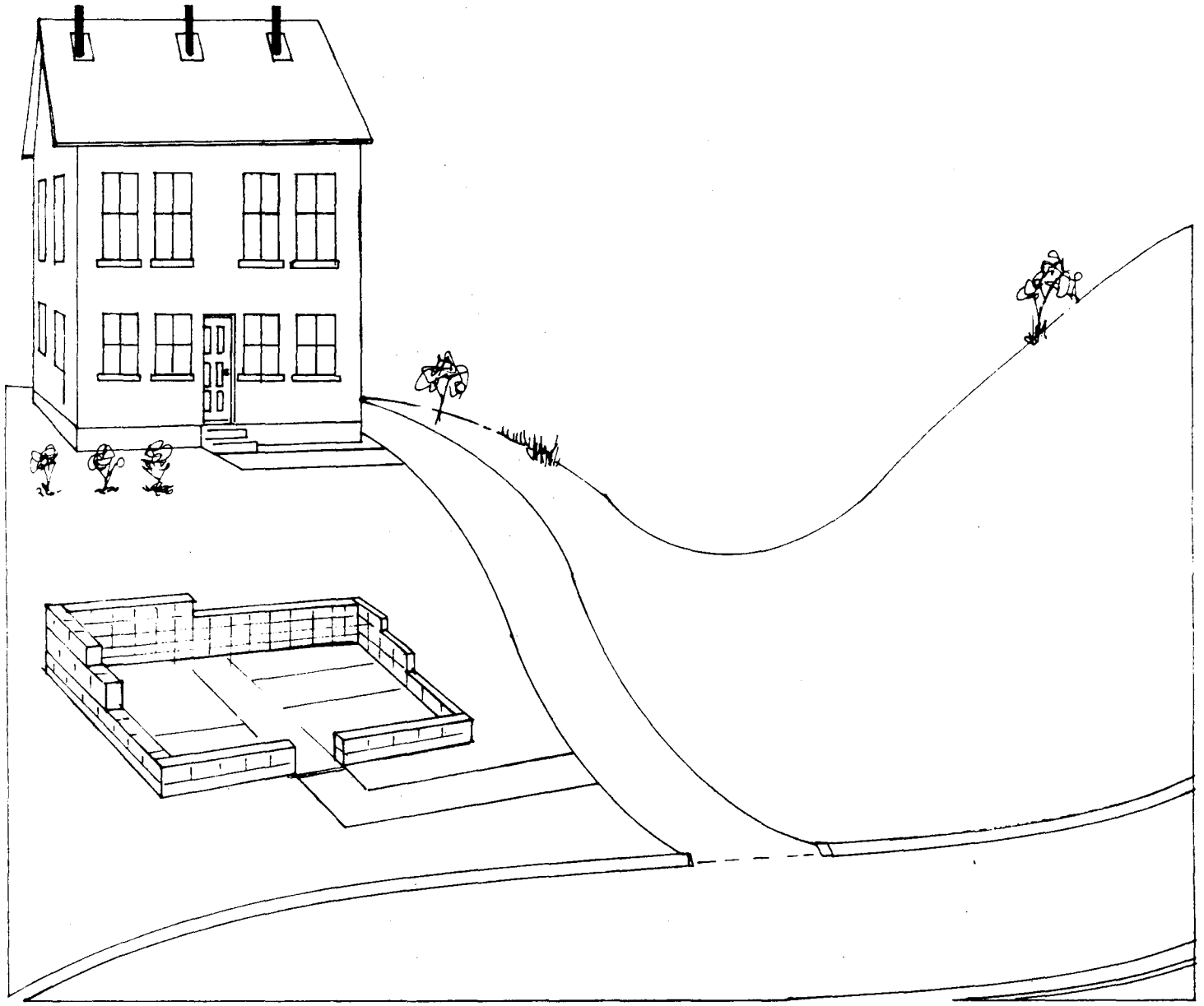

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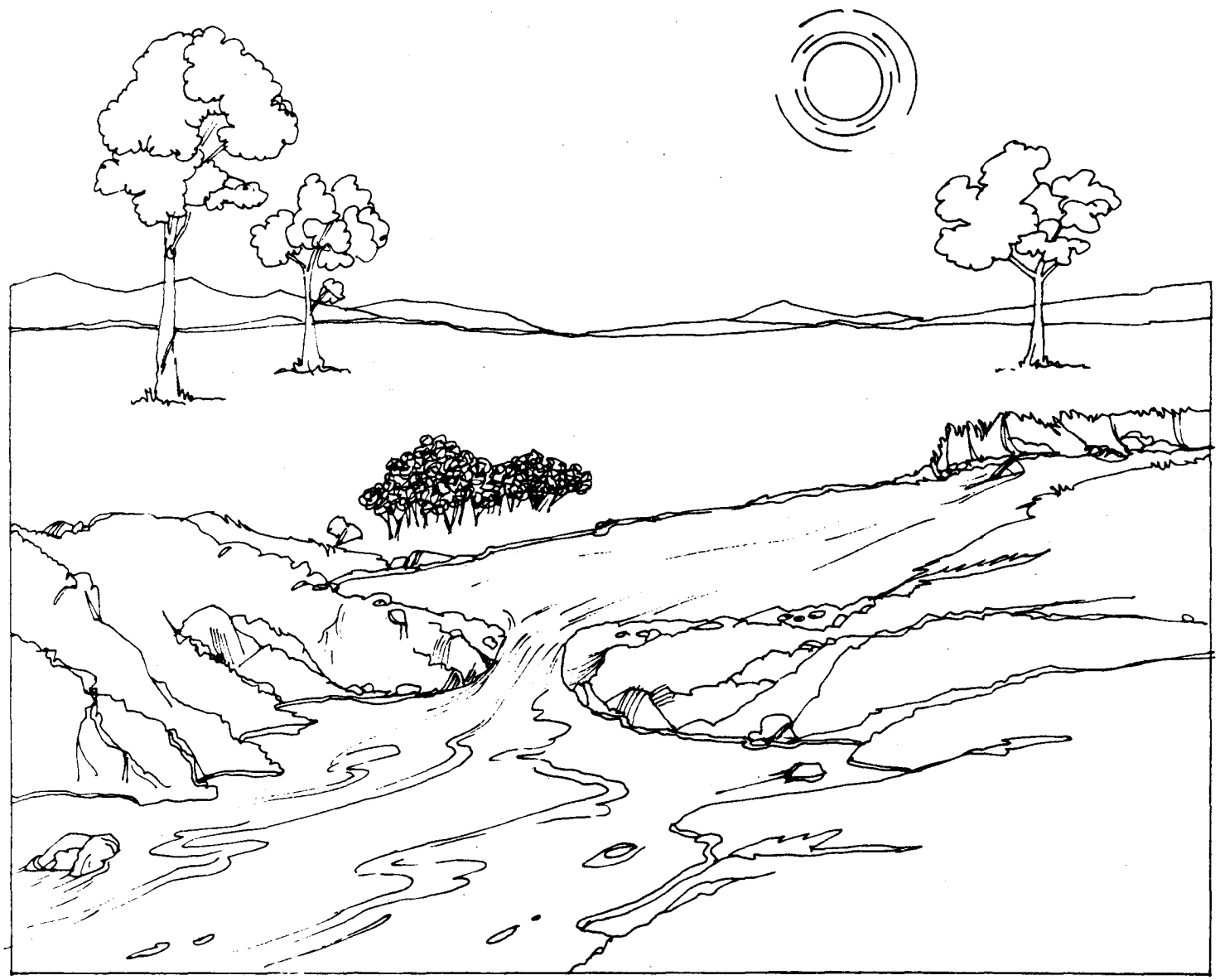

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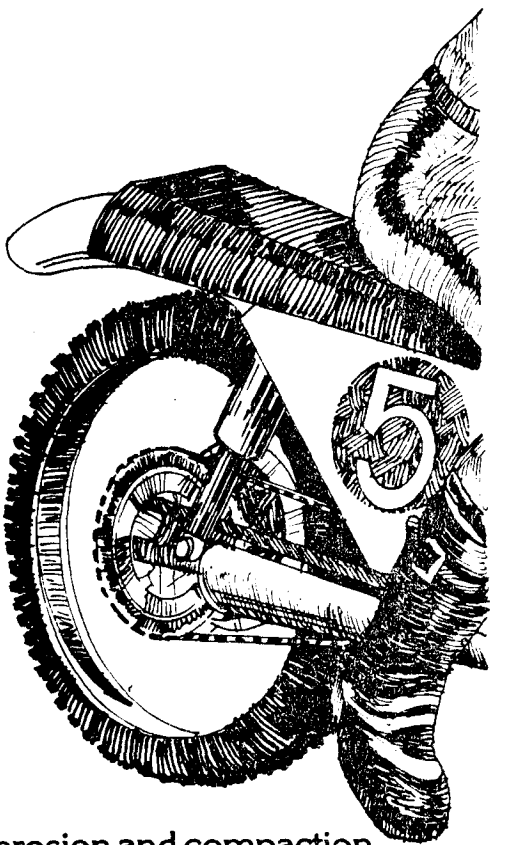

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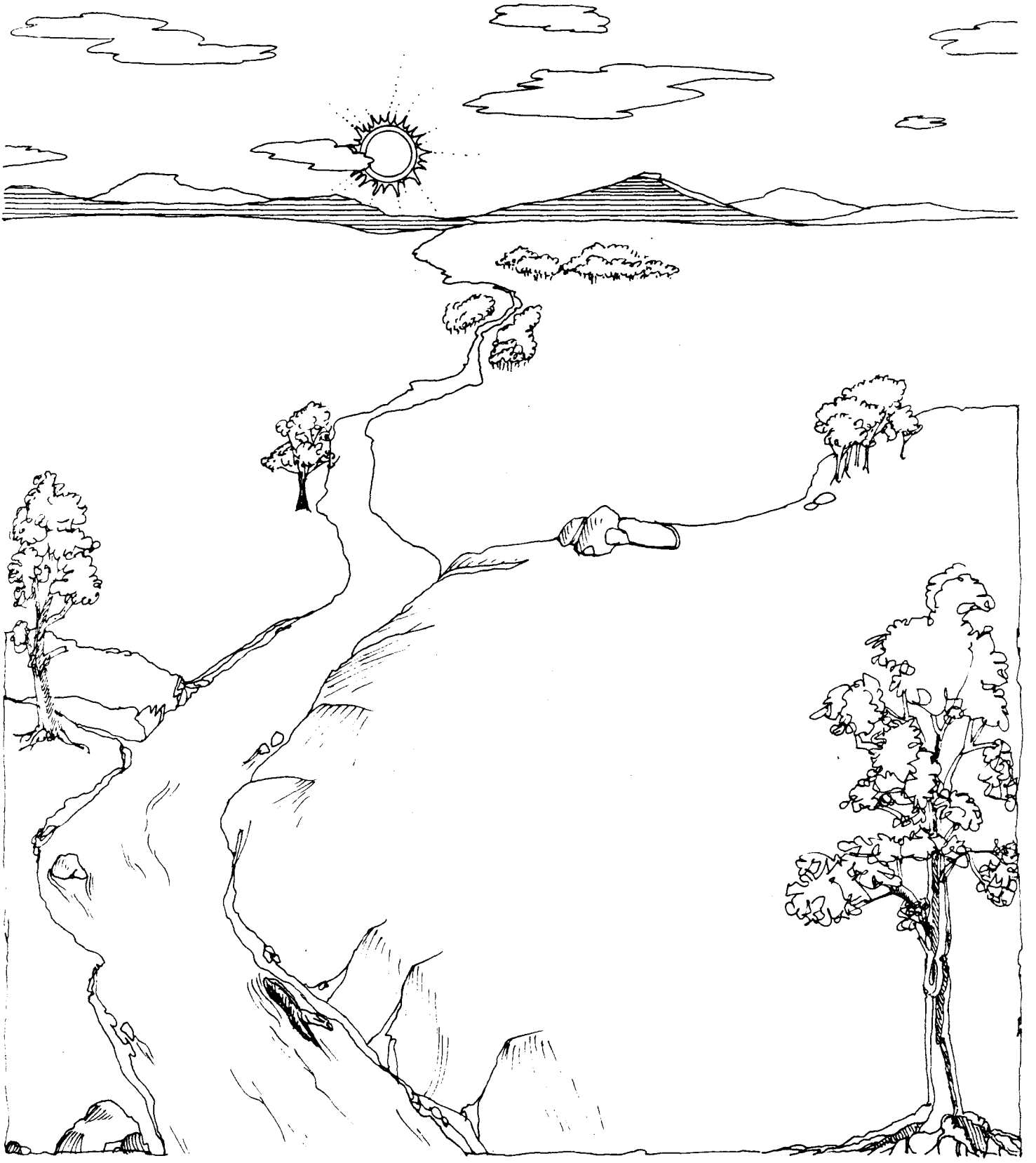

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