

Lesson 2

God Created Birds

New Words

beak, the bill of a bird.

down, soft, fluffy feathers that help birds stay warm.

gizzard (giz'·ərd), a part of the stomach that has strong muscles to crush food.

instinct (in'·stinkt'), a ready-made ability to do a difficult task without learning.

markings, colored patterns, such as stripes or patches, on birds.

perching, sitting on a high place such as a branch.

preen, to arrange or smooth the feathers with the beak.

quill, the long, stiff center tube of a feather.

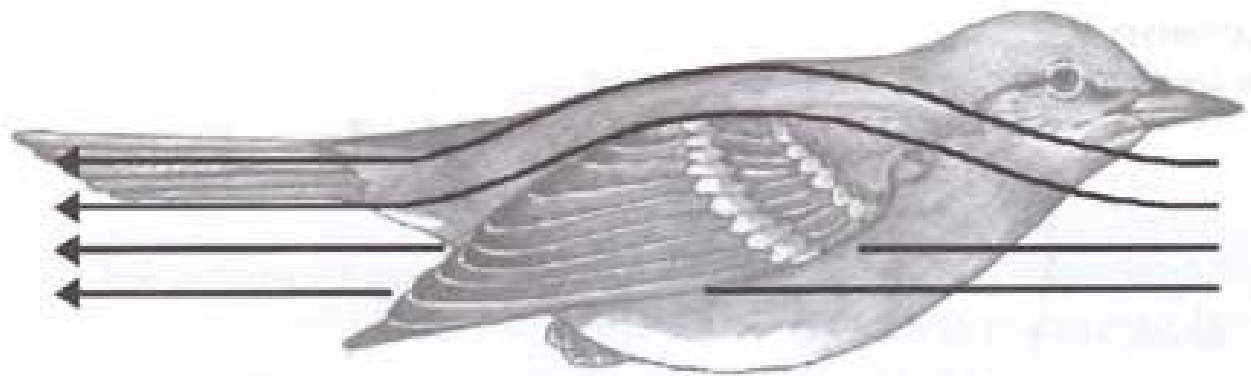
streamlined, having a long, smooth shape that can move easily through air or water.

God made birds to fly. We admire birds because they can do something we cannot do. They can fly! "Doth the hawk fly by thy wisdom, and stretch her wings toward the south?" (Job 39:26). The flight of birds is a wonder of God's creation.

Why did God make birds to fly? God gave flight to birds in order to protect them from their enemies. Most birds are too small to fight with enemies, such as cats or foxes. They cannot run fast enough to get away, but they can fly away.

Most birds use flying to get their food. Hawks have very good eyesight and can drop out of the air very fast to catch mice or rabbits.

How can a bird fly? God designed a bird's body to be streamlined so that it can move easily through air. A *streamlined* shape is long, smooth, and somewhat pointed at each end. As a bird flies, the air flows easily over the streamlined shape without much resistance. Most birds also have lightweight bodies with many hollow bones. This

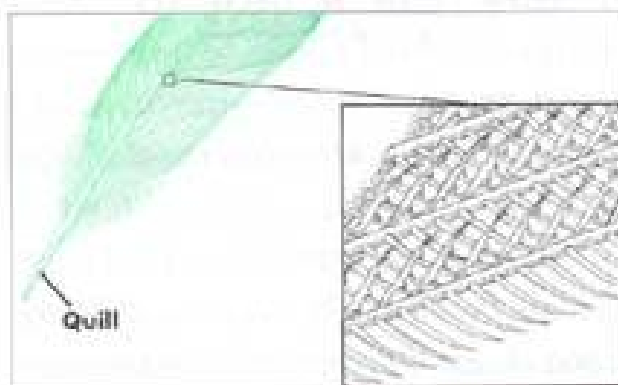


The streamlined shape of the bird's body helps it to move easily through the air.

makes their skeletons light and yet strong enough to support and protect them.

God gave birds strong wings and long feathers. Each feather is made stiff by a strong, hollow center tube called a *quill*. The branches coming out from the quill have barbs that hook the branches together to form a flat surface. With a microscope, you can examine this marvelous design. No bird could fly without long feathers with smooth surfaces and stiff quills.

In order to get off the ground, a



The design of a feather shows the wisdom of God.

bird must beat its wings rapidly. A small bird keeps beating its wings as it flies, but some larger birds, such as eagles, fly without much beating of the wings. They do this by riding on strong, steady winds high in the sky.

Men have copied the birds to make airplanes. Highly educated men spend hours designing a new airplane. Many experiments are done to test out new ideas. Millions of dollars are needed to design and make airplanes. In many ways, an airplane is like a bird. Both have wings. Both have streamlined bodies. Both can take off from the ground and land. But compared to a bird, an airplane is clumsy and wastes fuel. An airplane cannot change direction as quickly as a bird. An airplane cannot take off and land as easily. An airplane is dead; a bird is alive. Men design airplanes, but God designed birds.



Who designed each? Which has the best design?

Birds hatch from eggs. Have you ever watched a baby chick or duck hatching from an egg? First, you see a few cracks in the shell. You hear a soft tapping from inside the shell. The cracks grow larger as the baby bird keeps pecking away. Finally the egg splits apart, and the baby chick or duck struggles out into its bright new world.

All baby birds hatch from eggs.



A robin's nest

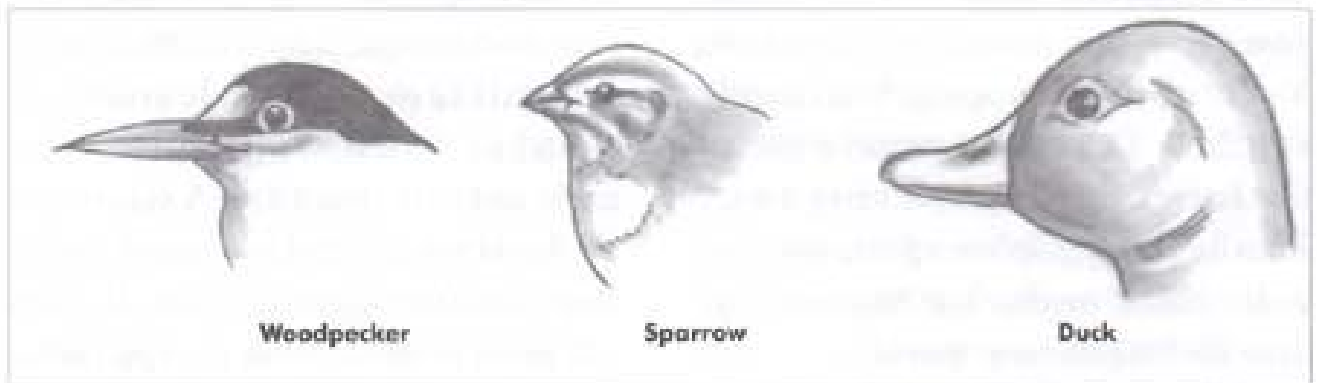
Usually the eggs are laid in a nest. God made each kind of bird to build its own special nest just the right size and shape. The ability to do a difficult task without learning is called an *instinct*. God gives animals various instincts. A robin has an instinct to make a good robin nest the first time it tries. It does not need to see a robin nest to make one. How God makes instincts to work is still His secret. It is a miracle to us. God reminded Job of these facts when He asked, "Doth the eagle mount up at thy command, and make her nest on high?" (Job 39:27).

How do birds grow and live? When they are hatched, chicks, ducks, and many other baby birds have soft, fluffy feathers called *down* over their bodies. The down helps them stay warm. As they

grow older, they grow quill feathers so they can fly. But they still have down close to their bodies to keep them warm. Birds are warm-blooded. In fact, birds have a higher body temperature than you do. The human body temperature is 98.6°F (37°C); birds have a body temperature from 101° to 112°F (38° to 44°C). You would be sick if your temperature was that high.

Birds use their **beaks** to gather their food. Woodpeckers have pointed beaks for drilling holes in

trees to find insects. Sparrows have short, strong beaks for cracking seeds. Ducks have broad beaks called bills for gathering plants and insects for food from water. Birds do not have teeth to chew their food as we do. So God gave them special stomachs called **gizzards**. The birds swallow small stones for the strong muscles in their gizzards to use to grind their food. Birds that eat seeds have gizzards strong enough to crush seeds. God gave the birds everything they need.



Why do these beaks have different shapes?

Test Your Reading (Group A)

Find the correct ending that completes each sentence.

- | | |
|--------------------------------------|-----------------------------------|
| 1. God gave birds wings and feathers | a. to grind their food. |
| 2. God gave birds hollow bones | b. to keep warm. |
| 3. God gave birds streamlined bodies | c. to gather their food. |
| 4. God gave birds the instinct | d. to fly. |
| 5. God gave birds down | e. to have stiff, light feathers. |
| 6. God gave birds quills | f. to glide through the air. |
| 7. God gave birds gizzards | g. to be lightweight. |
| 8. God gave the birds beaks | h. to build nests for their eggs. |

Write the correct answers.

9. What makes the flat, smooth surface of the feather?
10. What is an instinct?
11. How does a baby bird hatch, or come out of its egg?
12. Give an example of how God gave a bird a special beak for a special use.

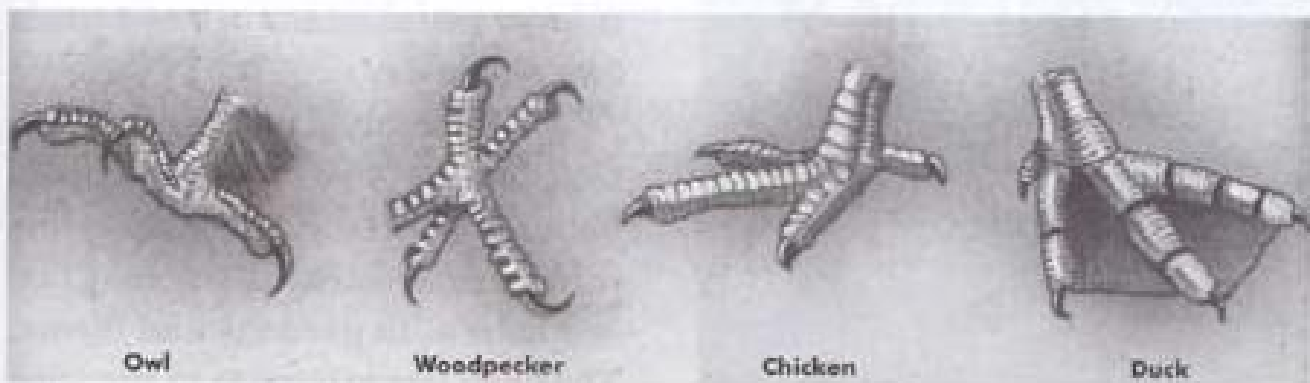
Feet are for sleeping and swimming. Of course, birds walk on their feet. But just as God gave special beaks to the birds, so He also gave them special feet. For example, God gave the chicken special feet for *perching*. Its feet have three toes in front and one behind. These feet can lock around a branch. The chicken can even go to sleep up in a tree away from danger while its toes are locked around a branch. Many other common birds, such as robins, cardinals, and blackbirds, are also perching birds.

Woodpeckers cling onto the sides of trees while they peck the bark for insects. God gave them feet with two toes in front and two behind. Each toe has a sharp claw for fastening

into the tree. Owls also have sharp claws. They use their claws for holding mice and other small animals that they catch.

God designed the duck's feet for water. He made them with webs between the toes for swimming. They are like small paddles that help the duck swim across streams and ponds.

Feathers for floating. Birds use their beaks for smoothing their feathers. This is called *preening*. Ducks not only preen their feathers, but they also add oil. The oil is produced by an oil gland near the tail. A duck smoothes the oil over its feathers with its beak. Water will not stick to oil, so it keeps the duck dry and allows it to float for hours



Why do different birds have different feet?

without water soaking the feathers. A duck must keep adding oil to its shiny raincoat to keep it watertight.

Birds are interesting creatures. They lay eggs, fly, swim, perch, preen, and sing. They are beautifully designed and colored. No wonder many people have a hobby of bird watching.

Bird watching. Do you like to hear birds singing? Can you tell the kind of bird by its songs? Can you identify a bird by its *markings*, or patterns of color? Do you notice the shape of the tail and beak? Do you know which birds swoop as they fly and which soar high overhead? If so, you make a good bird watcher. Who does not look up to see the V-shaped pattern of a flock of geese, honking as they fly north or south?

One good way to watch birds is to feed them. They need food especially in the wintertime when plants are

not growing. You can put sunflower seeds and bread crumbs in a bird feeder. Hang the feeder on a bush or tree that is near your house. That way you can watch birds close up.

Birds tend to be very excitable. A little noise or movement will send them flying away. A bird watcher needs patience. Often he uses a binocular to be able to get a good look at the markings of a bird that is at a distance.

A bird book is helpful to the bird watcher. Whenever you see a bird that is new to you, notice the bird's markings. Try to remember the shape of its head, body, and tail. Then find the same bird in a bird book to learn its name.

The farmer's friend. Sometimes when birds are eating our peas or cherries, we wish they would go away. But on the whole, birds help the farmer and gardener. They eat harmful insects and weed seeds. One bird might eat dozens of insects or thousands of weed seeds in a single day.

We have many reasons to thank God for the birds. We like birds because they sing. They are colorful and interesting to watch. They are helpful to gardens and farms. They call our attention to the wise God who made them.



Birds eating sunflower seeds

Test Your Reading (Group B)

Copy and complete the following chart about birds' feet. The first one is done for you.

	Description of Feet	Special Use for Feet
Robin	<i>three toes in front, one behind</i>	<i>perching</i>
13. Woodpecker	a. _____	b. _____
14. Owl	a. _____	b. _____
15. Duck	a. _____	b. _____

Choose the best answer.

16. A duck can float on water because
 - a. it can paddle with its feet to get it up.
 - b. oil on the feathers keeps out the water.
 - c. the bottom of the duck's body is very light.
17. If you saw a duck preening, you would see it
 - a. rubbing its feathers with its beak.
 - b. moving its feet over its feathers.
 - c. fluffing its feathers by flapping its wings.
18. A good way to attract birds to your house is to
 - a. plant pretty flowers around the house.
 - b. keep bird feed in a bird feeder.
 - c. wait patiently under a tree.
19. If you want to identify a strange bird you saw,
 - a. you need a binocular.
 - b. you need some bird food.
 - c. you need a bird book.
20. A farmer can be glad if blackbirds are in his field as he disks it because
 - a. then they can get close enough for him to shoot them.
 - b. he knows that he will have less problem with insects.
 - c. they give him something interesting to watch while he works.

Reviewing What You Have Learned

1. The backbone is part of the
 - a. skeleton.
 - b. exoskeleton.
 - c. spinal cord.
2. Skeletons ——— the soft parts of animals.
3. The small bones that protect an animal's spinal cord are called _____.
4. Which group of animals all have external skeletons?
 - a. amphibians, reptiles, birds
 - b. crabs, centipedes, insects
 - c. mammals, millipedes, spiders
5. Which group of animals all have backbones?
 - a. amphibians, reptiles, birds
 - b. crabs, centipedes, insects
 - c. mammals, millipedes, spiders

Extra Activities

1. Use a bird book or an encyclopedia to study the different kinds of bird feet and bills. Find out how each bird is designed for getting a certain kind of food.
2. Keep a class record of the birds you see this year. Write a list of birds commonly seen in your area down the left side of a paper with lines. Leave room below the list for additional birds. You and your classmates can sign your initials the first time you see that kind of bird.
3. Try writing with a quill as people did long ago before there were pencils and ballpoint pens. You need a bottle of ink and a stiff feather. Ask an adult to sharpen the feather to a point with a knife. Now dip the tip of the quill into the ink and try to finish a lesson assignment.

Materials needed:

- bottle of ink
 - stiff feather
 - knife
4. Look at feathers with a microscope. Pull some of the branches apart so that you can see the barbs that hold the branches together to form a clothlike covering. Notice the order and beauty God has used in making feathers.