

What Is Sound?

by John M. Scott

- 1 Something you never see may have saved your life today when you were about to cross the street. What was it?
- 2 Each year people spend a great deal of money to fill their rooms with something they never see. What is it?
- 3 If you are in one room, what helps you know who is talking in the next room?
- 4 You have most likely guessed that the answer to all the questions is **SOUND**.
- 5 Sound is a big part of your life. But what causes it to happen? What makes



sound? And how does sound reach you? How does it travel?

- 6 The starting point of all sound is something that vibrates, or moves back and forth. When you pound a drum or ring a bell, you are making things vibrate. Vibrating objects make sound.
- 7 When you talk, your tongue, vocal cords, and lips move back and forth. They set the air into motion. They even make your head rattle and shake. To prove it, simply place your hand firmly on top of your head. Now talk loudly or sing. You will feel your head shake.

8 When you talk on the phone, the sound of your voice is not really carried through the wires. What happens is this: When you talk, you set the air into motion. This moving air hits a small piece of metal inside the mouthpiece of the phone and makes it vibrate. The motion of this metal controls the amount of current that goes through the wires. The changing flow of current makes another piece of metal in the receiving end of the phone vibrate. It moves back and forth the same way the first metal plate did. The vibrations are heard by your listener.

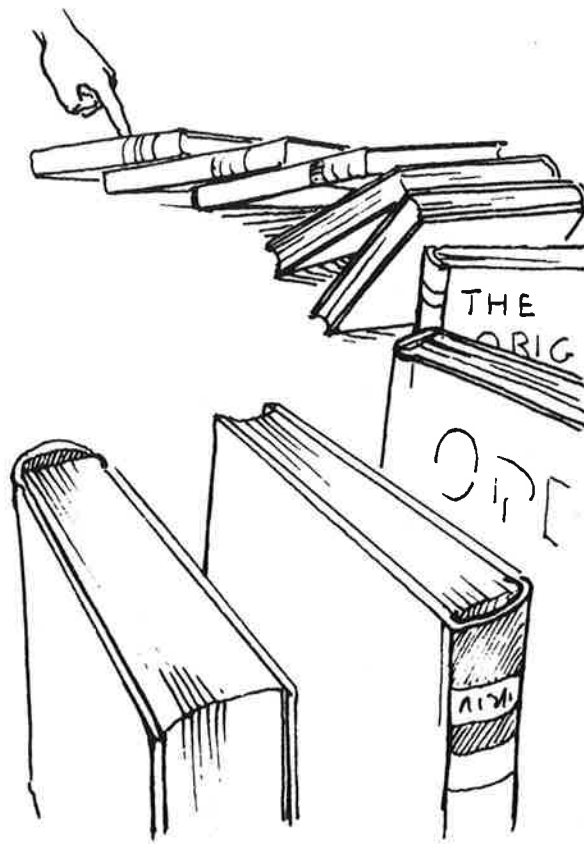
9 How does sound travel? Sound travels in waves of moving air. We cannot see sound waves, but they act much like water waves. After a rain you may have seen puddles on the ground. Perhaps you threw a small rock or pebble into the puddle. You saw ripples or waves form in tiny circles around the spot where the pebble hit the water. They then spread out into ever larger circles until the waves reached the edge of the puddle.

10 Sound waves travel in much the same way through the air. Here is something you can do to show how sound waves travel. Get five or six hard-covered books about the same size. Stand them up in a row so that the front cover of one book is close to the back cover of the book ahead of it.

11 Give a push to the first book. This push will travel from the first book to the next one. It will go down the line until the last book falls. As you will see, you do not push the last book yourself. You push only the first book. But this

push is handed on from the first book down to the last one.

12 It is the same kind of push that makes sound waves travel through the air. The push goes from one speck of air (called a *molecule*) to the next one. It continues until, finally, the air next to your eardrum is pushed into motion. This moving air makes your eardrum vibrate. And you hear something!



13 Vibrations make sound. The vibrations make the air move in waves. The wave finally reaches the eardrum of the listener. Because of these simple facts, you hear many things, such as the voice of a friend, the song of a bird, and the whisper of the wind.

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How Well Did You Read?

If a statement is true according to the story, write *T*. If a statement is false, write *F*.

- 1 Whenever you hear a sound, you can be certain that something has vibrated (moved).
- 2 When you talk, your lips, tongue, and vocal cords vibrate.
- 3 Sound is carried by air in motion. Therefore no sound could be heard in a room with no air.
- 4 Telephone wires are like little pipes that let vibrating air pass through them.
- 5 Telephone wires carry electric current, not sound waves.
- 6 Sound is something you cannot see.

Learn about Words

Vocabulary

- A** You can often tell the meaning of a word by reading the words around it.

Look at each number in parentheses. Find the paragraph in the story with the same number. Then find the word that fits the given meaning. Write the word.

- 1 go from one place to another (5)
- 2 guides; directs (8)
- 3 flow of electricity (8)
- 4 back-and-forth movements (8)
- 5 very small waves (9)

- 6 tiny bit (12)
- 7 keeps on going (12)

- B** A word may have more than one meaning. Its meaning depends on the way it is used. The word *band* is an example.

The *band* will play a march.
The hat has a wide *band* around it.

Look at each number in parentheses. Find the paragraph in the story with the same number. See how the word in **heavy type** is used in the paragraph. Decide whether it has meaning *a* or *b*. Write *a* or *b*.

- 8 **cross** (1)
 - a go from one side to another
 - b mark with an X
- 9 **spend** (2)
 - a pay out
 - b pass the time
- 10 **objects** (6)
 - a purposes; goals
 - b things that can be seen or touched

Word Study

C The words *am, are, is, was, were,* and *been* are forms of the verb *to be*. Write the correct form of *to be* for each sentence below.

- 11 Sharks (*is, are*) fish.
- 12 I've (*been, be*) at the store all morning.
- 13 The officers (*were, was*) obeyed by the soldiers.
- 14 The birds (*is, are*) flapping their wings.
- 15 The cocoa (*were, was*) in the jar.
- 16 Darrin will (*been, be*) here all year.
- 17 The earth (*is, are*) round.
- 18 I (*am, is*) going back home today.

D To make sensible sentences, words must be put together in a meaningful order. Read each group of words below. If the words make a sensible sentence in their present order, write *S*. If they make no sense because the order is jumbled, write *J*.

- 19 Flying fish don't have wings.
- 20 Peggy played a joke on her brother.
- 21 Battle the ready soldiers are for.
- 22 The swans sailed along the lake.
- 23 Sense dog smell my has a good of.
- 24 Bennie root tree on tripped the.
- 25 This cake will bake easily.
- 26 I would like to live in a castle.

E Sentences have patterns. Here are sentences in three different patterns:

1. **N-V:** John ran.
(Noun) (Verb)
2. **N-V-N:** Sarah has shoes.
(Noun) (Verb) (Noun)
3. **N-LV-N:** Susan is a doctor.
(Noun) (Linking Verb) (Noun)

Compare the sentences below with the examples. Decide which pattern is used in each sentence. (Remember that *am, are, is, was,* and *were* are linking verbs.) Write *N-V, N-V-N,* or *N-LV-N*.

- 27 The baby cried.
- 28 My sisters are doctors.
- 29 Jack smiled.
- 30 Ed washed the car.
- 31 The dog bit my leg.
- 32 Jayne is my sister.
- 33 The bell rang.

Use Your Imagination

When moving sound waves (or air waves) strike your eardrums, you know that something has made a sound. But suppose a tree falls in a lonely forest, where there is no one to hear its crash. Does it really make a sound at all? Or does sound exist only when it is heard? Discuss this with some friends and see what different ones think.