Two Pendulums Taking Turns
Illustrated by Len Ebert
Two pendulums joined together can have a strange effect on each other. See for yourself with this activity.

You will need some string, two tablespoons, and two chairs. Place the chairs back to back about three feet apart, and tie a string between them. We will call this the cross string.

To make the pendulum, tie each spoon to the end of a two-foot-long string, then tie the other end of each string to the cross string. Be sure the two spoons hang the same distance below the cross string. Position the two hanging strings so that each of them is about one foot away from the chair closest to it and so that the strings are about a foot apart.

While one spoon hangs straight down, start the other one swinging. Then stand back and watch. The swinging pendulum will begin to slow down, and the resting pendulum will start to swing. After a short time, the pendulum you put in motion will stop entirely, and the other will be swinging hard. Then the process will reverse. Soon the first pendulum will be swinging again, and the second will be stopped, just as at the start.

How It Works
As the spoon swings, its string pulls back and forth on the cross string. (If you look closely, you can see the cross string move.) The moving cross string starts the other spoon swinging. In this way, the swinging motion of the first spoon is transferred to the second.

But as the second spoon starts to swing, it makes the cross string move back and forth, too. It moves the cross string in such a way as to make the first spoon slow down and finally stop.

Unless the cross string is free to move and transfer the motion from one pendulum to the other, the “trick” will not work. To prove this, replace the cross string with a broomstick, held still at each end. If the broomstick is held so that it will not move, the swinging of the first spoon will have no effect on the other spoon, which will continue to hang motionless.