Another Kind of "To and Fro" Motion

Imperfected children,
respond with the next bottle selected and produce the same
without being noticed, change the vibration of the bottle to a-
ment or vibrations of the table, so that is thought to suit the
impression of different tones have different effects on
produce a noise
produce a noise, although they may vibrate or oscillate at some
and more and more until the little weight located the glass and
phrased word, the pendulum can be made to swing
Chapter II

ORIGIN OF SOUND

CILBERT SOUND EXPERIMENTS
**Experiment No. 4.** A little tuning fork to a block and piece of your experiments.

The method which you will find most satisfactory for a majority.

**Gilbert Sound Experiments**

**Gilbert Boy Engineering**
We all know the sounds that we make with our throats when we talk and sing, but they are not produced by vibrations of the vocal cords, as our throats have no cords. These sounds are produced by vibrations of the vocal cords, and it is the sound that is produced by these vibrations that we perceive as the sound of our voice.

**How We Make Sounds with Our Throats**

These sounds—called "vibrations"—are produced by the motion of the vocal cords. When we talk, we move the vocal cords to produce sounds. These sounds are then perceived by our ears as speech.

**Experiment No. 8.** Strike a bell with a cork hammer. (See Figure 12.) You can observe the vibration of motion of the bell and see how it produces sound. The vibration of the bell is what makes it produce sound.

**Experiment No. 9.** Strike a bell with a cork hammer. (See Figure 11.) The bell produces sound by vibrating. You can observe the vibration of the bell with a magnifying glass.

**Experiment No. 10.** Now take the tuning fork and see if it is in vibration. (See Figure 11.) You can observe the vibration of the tuning fork by placing your fingers on it and feeling the vibration.
We have discovered now that sound is produced by vibrations of air columns. We can enable us to produce almost any sound.

VIBRATION OF AIR COLUMNS

Gilbert Boyce Engineering

Gilbert Sound Experiments

16. Connect the bent glass tube to a glass jet and make a light.

17. Insert a thin rod covered with wire gauze. (See Figure 15.)

PROCEED A GLASS JET

18. Insert a reed (See Figure 14). The reed opens and closes as the wind strikes the edge of the opening, causing the jet to whistle.

MUSICAL FLUTES

(See Figure 15.)

The jet is that of an instrument in which sound is produced by vibration of the lips on the mouthpiece, known as the corona, whose instrument is used in all bands.

PEN. 12.

And we have an instrument in which the sound is produced by blowing across the sharp edge of the opening, such as the whistle, the flute and the pipe organ. (See Figure 13.)
TRANSMISSION OF SOUND

CHAPTER III

CAN SOUND BE CARRIED BY ANY OTHER SUBSTANCE

Then air?

As you may have concluded already, the sounds are produced by vibrations of the air within the glass tube. By lighting the lamp you will set many fascinating results. You will at once hear loud musical tones. By varying the distance of the lamp from the glass tube you can produce different tones. You will get many fascinating results. By changing the distance of the lamp from the glass tube you can produce different tones. You will get many fascinating results.
CHURCH CHIMES WITH A SILVER SPOON

Wrap one end of the string around one finger and the other.

*See Figure 18*

Take a silver spoon and tie a string to it, as per illustration.

*Experiment No. 1* The following is an extremely pleasing.

CIBERT BOY ENGINEERING

*takes about a few seconds longer for it to reach your ear, the sound is heard and, when you take your ear away, the sound tracks and notices how soon it track. Pull your ear to the right of a man sitting a bow on your head you noticed the effect of heat. In the heat of the air the effect of your ear can be demonstrated.*
CIBERT SOUND EXPERIMENTS

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The reason for this is that when the string near the sound box is not pressed against the wood or the string of the box in which case the sound is not produced by hitting the string, it may be heard by your ear. This sound is produced by a very satisfactory method of producing the sound of the string box when the string is used.

Experiment No. 11. A very satisfactory method of producing the sound of the string box when the string is used. The tone may be heard for a much longer time when the string is used.

To get the same result in an even greater degree, The tone may be produced in a very satisfactory experiment and one worth while.

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WYN SOUNDS CAN COME THROUGH THICK WALLS

Carrying sound where it is such a poor conductor is a difficult problem. Some sound waves may travel further and reach our ears. The science of this is called acoustics or the science of sound. By this time you can readily understand why it is that sounds cannot be heard through walls, owing to the fact that they have difficulty in passing through materials. Sometimes sounds refract, that is, they change their direction when they pass from one medium to another. This is called the bending of the sound wave. It is important to understand that when sound waves pass through materials, they do not travel in a straight line. They are absorbed, scattered, or reflected by the materials they pass through. This principle is used in designing soundproofing materials and in the design of sound systems.

HOW TO MAKE A TOY TELEPHONE

The toy telephone, or telephone, is an example of a simple device that uses the principles of sound transmission. It consists of a piece of wood or plastic tube, a piece of string, and a metal or plastic horn. When you speak into the horn, the sound waves are transmitted through the string to the other end, where they are heard. This principle is also used in the design of larger telephone systems. It is important to understand that the sound waves travel through the string, not through the air. This is why a telephone works, even though you cannot hear the word "telephone".

The old-fashioned method of bringing the sound of the box cover to the ears is not so good. When the end of the string does not press against the box cover, the sound of the box does not come into play and the box cover is not a good substitute for the horn. In the case of the telephone experiment, causing a louder sound is pressing against the box cover, the entire cover vibrates just as the speaker of a radio does.