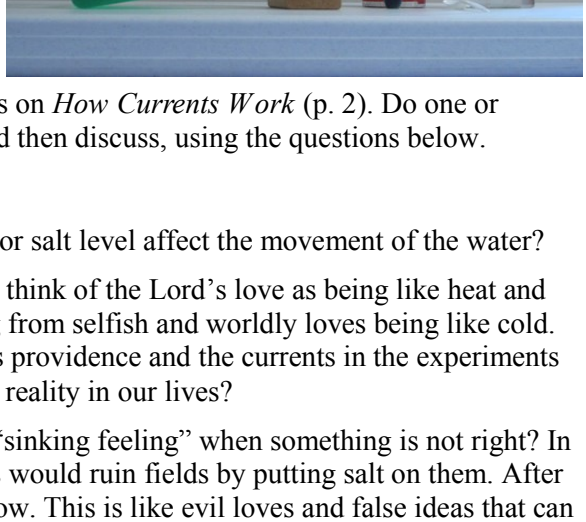
Learn by Doing

Choice Currents



The Writings compare the sphere that draws all people toward heaven with strong ocean currents that can pull ships along. Discover how temperature and salinity affect ocean currents by doing an experiment.

There are two experiments on *How Currents Work* (p. 2). Do one or both with the students, and then discuss, using the questions below.

Discussion

1. How did temperature or salt level affect the movement of the water?
2. We are encouraged to think of the Lord's love as being like heat and people who are acting from selfish and worldly loves being like cold. How might the Lord's providence and the currents in the experiments illustrate this spiritual reality in our lives?
3. Have you ever had a "sinking feeling" when something is not right? In ancient times enemies would ruin fields by putting salt on them. After this, nothing could grow. This is like evil loves and false ideas that can destroy the love of what is good and true in our lives (see *Arcana Coelestia* 1666).
4. How might the effects of spiritual "salt" affect the turn-over of good and useful ideas in our minds? (We need to *see* what is not right in our lives in order to fix it. The currents created by salt in the water are like the spiritual 'currents' in our awareness of the good and bad thoughts and actions in our lives.)

Materials Needed

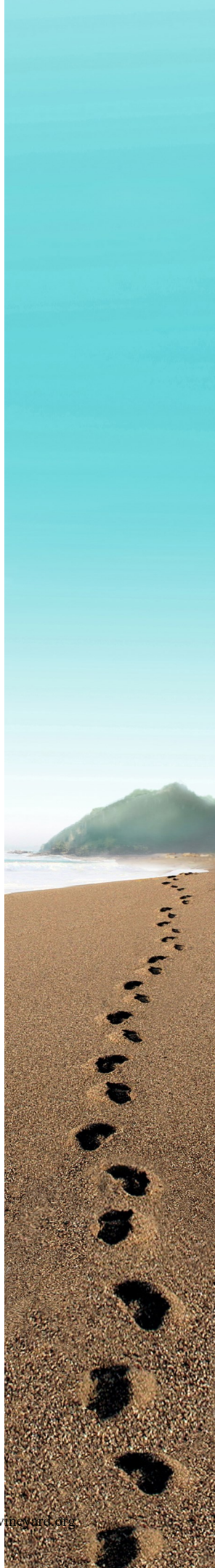
Supplies vary depending on the experiment you choose. Supply lists are on *How Currents Work* p. 2.

Prepare in Advance

Gather supplies. If doing *How Temperature Affects Currents* prepare blue ice cubes using food coloring. Do the experiment(s) at home to discover the tricks that will make them work best.

New Church Concept
Divine Providence

Divine providence is the Divine operation in a person who has set aside love of self.... When this love has been set aside, the Lord enters with the affections of a love for the neighbor...and enables the person to see that there is life after death, a heaven, and eternal happiness. *Divine Providence* 207



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How Currents Work

There is a sphere elevating all people toward heaven, which proceeds continually from the Lord. It is like a strong current in the ocean, which with hidden force bears a ship along. All those who believe in the Lord and live according to His commandments enter that sphere or current and are raised upwards; but those who do not believe in Him, have no desire to enter that sphere, but turn aside and are caught up by the stream which flows into hell (*True Christian Religion* 652.3).

Ocean currents are affected by a variety of factors. This activity takes a look at two of these factors: temperature and salinity. Try your hand at one or both of these experiments.

How Temperature Affects Currents

***Supplies needed**: glass jar, blue ice cubes (made from water with food coloring in it), ground pepper, warm water*

Fill the jar half-way with warm water. Sprinkle some ground pepper on the surface. Put a blue ice cube in the water and watch what happens as it melts. The sinking ice water should move the warm water, pushing the pepper grains to the bottom of the jar.

In nature, this situation happens when warm and cold water move between the poles (where it is cold) and the equator (where it is warm). The changes in temperature cause constant currents in the ocean.

How Salinity Affects Currents

***Supplies needed**: rectangular plastic storage container, block of wood or book to elevate one end (see picture of set-up p. 1), 1 large pitcher fresh water at room temperature, 1 small pitcher water at room temperature, table salt, food coloring (one color), spoon*

Place the plastic storage container at eye level. Raise one end by putting a block or book underneath it. Pour the large pitcher of fresh room temperature water into the lower end of the container. Make sure the elevated end of the container remains dry, above the water level, after you have poured the water in. Take the small pitcher of room temperature water. Add several spoons of salt and a few drops of food coloring. Stir until mixed.

Pour the salty water gently into the container at the dry end of the storage container. Take care to pour slowly from down low so the water does not splash. The saltier colored water will sink to the bottom of the container because it has greater density, or "heaviness". The effect of this experiment is dramatic when carefully done.

Oceanographers use salinity maps to predict the movement of currents.

To the extent that we are united to heaven, the higher levels of our minds are opened, and to the extent that they are opened, we see what is dishonest and unfair; and to the extent that we see this, these qualities can be dispelled. For **no evil can be banished until it has been seen**…. Once the process has started, the Lord works his wonders within us, and causes us not only to see evils but to refuse them and eventually to turn away from them (*Heaven and Hell* 533).