Leonardo da Vinci (1452 — 1519) was a multi-talented Italian scholar who gave meaning to the term “Renaissance man.” He was a painter, architect, mathematician, inventor, engineer, and more. The Codex Leicester is a 72-page scientific journal handwritten by da Vinci. The Codex is named for the Earl of Leicester, Thomas Coke, who bought it in 1717. In the Codex, da Vinci notes his observations about astronomy, the movement of water, light, fossils, and geology. The creative thinking process of a scientist is on display as da Vinci argues, probes, and accumulates information on which to base claims.

Here are selections of the Codex that have been translated and adapted to provide a simplified look at da Vinci’s experiments and observations.

*Note: Headings have been inserted by the editors.*
Observing light and waves

“The Moon, not having any light of its own but the light which it takes from the Sun, could not take nor reflect that light if it had not a dense and shining surface like a mirror or liquid. But, if it were like a dense and shining mirror, it would give us only some of the light, as if the eye which looks at it were situated in the point a, and such a thing would make very small light. However, maybe the Moon contains oceans. If its glow comes from a liquid body, the reflected rays would not lose their character nor their great brightness. But if it is wavy, as we see in the oceans, then the brightness will convey itself to each single wave on its own account, and then all together will cause a great quantity of brightness. However, the shady parts of the waves mean the brightness will not be as powerful as it was originally.” (Codex Leicester, Folio 1 R)

Shells in the mountains

“Shells can be seen today in Italy, far from the seas, at great heights. You say they were brought by the Great Flood described in the Bible, which was higher than the highest mountain. My reply is that these shells, which always reside near sea shores, ought to remain on those mountains, and not so low as the feet of the mountains, every one at the same height, layer by layer. If you say that these shells are inclined to stay near the sea shores, and that, as the water rises at such a height, the shells follow the rising water up to their greatest height, I reply that since the shell, an animal, is no faster than the land snail when it is out of the water, it will be even slower. The shell does not swim but rather it makes a trail in the sand and will walk less than 2.5 meters a day. At this rate, the shell could not walk from the Adriatic Sea to the Monferrato in Northern Italy, which is a distance of 400 kilometers, in 40 days, as the Bible said. And if you say that the waves carried the shells there, I reply because of their weight they cannot be supported except on the sea bed. If you do not accept this, at least acknowledge that they had to remain on the tops of the highest mountains, and in the lakes that are enclosed among the mountains.” (Codex Leicester, Folio 8 V)

Underground water and a moving Earth

“The heat of the fire burning within the center of the Earth warms the waters which are enclosed within the great caverns. This heat causes
the waters to be warmed and evaporated, and they raise themselves up to the roofs of the caverns, and climb through cracks in the mountains. They climb higher still, until it finds the cold, and suddenly changes back into water. It falls down and forms the beginning of the rivers, which are then seen descending from there. But when great coldness pushes back the heat toward the center of the world, this heat becomes more powerful and gives rise to greater evaporation of the waters. These evaporations, heating the caverns in which they circulate, cannot produce the waters as they used to. Just as it is seen in the making of alcohol, if the evaporation of wine did not pass through cool water, it would never change into alcohol, but would return and finally it would condense to such an extent that it would break through its confines. We will say the same of water heated in the depths of the earth. If the water cannot find the coolness it needs, it does not form itself into water as it did before, but it condenses and congeals like the fire multiplied and condensed within a bomb. It makes itself harder and more powerful than the matter that receives it, and so, unless it has a sudden exhalation, it immediately proceeds to break and destroy that which confines it. The evaporation of water bursts within the depths of the earth in different places, revolving and rumbling with great commotion. Finally, it reaches the surface of the Earth as an earthquake, ruining mountains and collapsing cities. It emerges with great wind through the breaks previously made in the earth; and so, by this exhalation, it consumes its own power.” (Codex Leicester, Folio 28 R)