

## THE UNIQUENESS OF WATER

"Water is actually one of the strangest substances known to science. This may seem a rather odd thing to say about a substance as familiar but it is surely true. Its specific heat, its surface tension, and most of its other physical properties have values anomalously higher or lower than those of any other known material. The fact that **its solid phase is less dense than its liquid phase** (ice floats) is virtually a unique property...

"These strange properties make water a uniquely useful liquid and the basis for living things. Indeed, it is difficult to conceive a form of life which can spontaneously evolve ... yet is not based in an essential way on water" (Barrow and Tipler, p. 524). Actually, it's been impossible for evolutionists to devise *any* solvent for life but water.

Water has far higher melting and boiling points than any other compound of similar molecular mass. These other compounds are gases at room conditions.

"The anomalous melting and boiling points of water are due to the fact that water forms **strong hydrogen bonds**. ... The bond angle of the free water molecule (104.5°) is only slightly less than the ideal tetrahedral angle (109.5°), so water molecules tend to polymerize to form a tetrahedral structure. This structure is rigid in ice [i.e., ice is a solid] ...

"Because the H-O-H angle in water is so close to the ideal tetrahedral angle ... water tends to polymerize into an open structure. ... The anomalous [i.e., uniquely low] density of ice is due to the close approximation of the H-O-H angle to the ideal tetrahedral angle ... (Barrow and Tipler, pp. 527-533).

Virtually all substances except water have a solid phase that shrinks or contracts upon freezing, giving the solid a higher density and causing it to sink below the liquid. "The expansion of water on freezing is essential for life ...

"If ice were not less dense than water, it would sink on freezing. The coldest water in a lake or ocean would congregate near the bottom and there freeze. Ice would accumulate at the bottom; the amount would become greater each year as more ice formed during the winter and did not melt during the summer. Finally, all the lakes and oceans would be entirely frozen. As it is, ice forms only on the surface and protects the water below and marine life from further cooling. Liquid water thus remains available for use as a solvent by living creatures" (Barrow and Tipler, pp. 533-534).

"Water also has a **higher specific heat than almost all organic substances**. ... The high specific heat of water allows water to be used as a store of heat, and also serves to stabilize the temperature of the environment. Large amounts of heat must be added to masses of water to change its temperature significantly" (Barrow and Tipler, p. 534).

"The **thermal conductivity of water is also higher than that of most liquids** ... This high thermal conductivity, coupled

with the fact that water can transfer heat by convection, also allows large amounts of water to act as a temperature stabilizer for the environment" (Barrow and Tipler, pp. 534-535).

"Water has a **higher heat of vaporization than any known substance**. ... Such a high heat of vaporization makes water the best possible coolant by evaporation. And indeed living creatures make extensive use of this cooling mechanism. The strength of the hydrogen bond in water is responsible for the uniquely large heat of vaporization of water. It is also responsible for water having a **very high surface tension** ...

"This high surface tension of water allows compounds which can reduce surface tension, and most of the biologically important carbon compounds have this property. These compounds tend to concentrate near a liquid surface, thus making biochemical reactions more rapid" (Barrow and Tipler, p. 537).

## Conclusions

Water is not an ordinary substance despite its abundance on earth. Further, the earth is the only place in the universe known to have *liquid* water. This means that **liquid water is unique to the earth**. Many stars have gaseous water, and some moons and planets have solid water (ice), but water liquid is the phase required to support life. Since liquid water exists nowhere outside earth as far as is known, this makes it appear that extraterrestrial life does not exist.

The unique properties of water are an example of Romans 1:20. We see a Designer behind this pattern of uniqueness. The Bible identifies this Designer as Jesus Christ. The special or unique characteristics of water bolded above make an impressive list of evidences of the Creator's design for the earth as the abode for life (Isaiah 45:18):

1. A solid phase less dense than the liquid
2. Strong hydrogen bonding
3. High specific heat
4. High thermal conductivity
5. Uniquely high heat of vaporization
6. High surface tension
7. Found in liquid form only on earth

Satan has tried to use evolutionism to obscure this revelation. Even so, thousands of physicists, chemists, engineers, and MD's -- the ones who typically best understand the points summarized above -- are creationists.

**Reference.** Bolding in quotations is added.

John Barrow and Frank Tipler, *The Anthropic Cosmological Principle* Oxford, 1986.