

## Did a Water Canopy Surround the Earth and Contribute to the Flood?

Isaac Vail (1840-1912) first proposed the canopy theory in 1874.<sup>1</sup> He believed a canopy formed millions of years ago as the earth evolved from a molten state. Vail supported his case primarily by ancient mythology, which in his opinion included Genesis 1:6-8a that states:

*Then God said, "Let there be an expanse in the midst of the waters, and let it separate waters from waters." And God made the expanse, and separated the waters which were below the expanse from the waters which were above the expanse; and it was so. And God called the expanse heaven.*

Notice that these verses do not explicitly say a canopy surrounded the earth.

Vail's canopy was a vapor cylinder surrounding the earth but open at the poles. Since then, many people have recognized problems with Vail's canopy and proposed variations. These usually involved a thin, spherical shell composed of water—as either a liquid, gas (a vapor), or solid (ice particles or an ice shell). As we will see, each variation has serious biblical and scientific problems. In fact, canopy theories “do not hold water.” But first, what are the standard arguments for a canopy?

### Traditional Arguments for a Canopy—and Brief Responses

**The Source of the Flood Water.** The Genesis flood raises two common questions: Where did the flood water come from, and where did it go? A canopy may answer the first question.

**Response:** No canopy theory claims to provide all the water for a global flood. Nor does any canopy theory begin to answer the second question. If flood water fell from a canopy high above the atmosphere, where did that water go after the flood? Somehow transporting this water back into outer space or suddenly forming deep ocean basins after the flood is hard to imagine or explain. However, the phrase “*the fountains of the great deep*” implies that the flood water came from subterranean sources. For an explanation of where the water went after the flood, see pages 86-119.

Many have probably rejected the flood account because they could not imagine where the flood water, which covered all the mountains, went. Canopy theories have contributed to this difficulty.

**Drop in Longevity.** People may age because of some radiation hitting them from outer space. If so, a canopy might have shielded pre-flood people from this aging process.

This could explain why lifespans before the flood were about 900 years.

**Response:** If this happened, we would expect an immediate drop in life spans after the flood. However, for twelve generations after the flood, human longevity remained higher than today. (See page 272.) Even Noah lived 349 years *after* the flood. Some argue that perhaps radiation damage accumulated genetically over many generations. Few, if any, canopy proponents have proposed specifically what type of harmful radiation it was,<sup>2</sup> how it reduced longevity so much without causing massive deformities and genetic diseases, why longevity leveled off at about 70 years rather than continuing to deteriorate, or how to test the proposed mechanism.

Most proposals for this drop in longevity are testable, but seldom tested. One test, which might have shown that cosmic or solar radiation reduce longevity, failed. Mice were raised in deep caves, shielded from both types of radiation. Neither those mice nor their offspring lived longer than other mice.<sup>3</sup> Furthermore, if radiation from outer space accelerated aging, then living at a lower elevation, where one is protected by a thicker blanket of atmosphere, should increase longevity. No record of such an effect is known.

Joseph Dillow's book, *The Waters Above*, is probably the most complete, accurate, and up-to-date defense of any canopy theory. After explaining other problems with the “longevity claim,” Dillow concludes, “So it appears that canopy theorists have been in error when they appealed to the shielding effect of the canopy as a direct explanation for antediluvian longevity.”<sup>4</sup> Dillow also states, “We readily admit that Genesis *does not* teach the existence of a pre-Flood vapor canopy.”<sup>5</sup> [emphasis in original]

**A Uniformly Warm Climate.** A canopy may have given the earth a uniformly warm climate. This might explain why fossils of temperate animals and plants (such as dinosaurs and large trees) are found in Antarctica and on islands inside the Arctic Circle.

**Response:** During a global flood, some plants and animals may have floated to polar latitudes where they were later fossilized. (Pages 152-183 give another explanation for polar plants and animals.) Even if a canopy produced a warm polar climate, it would not satisfy another requirement for lush vegetation—sunlight. Polar nights are six-months long, and when the Sun does shine, it is always low in the sky. How could large trees, dinosaurs, and their enormous food chain survive, let alone thrive in polar

regions with so little light, even if a canopy transmitted 100% of the sunlight and produced warm temperatures?

Despite much speculation, no one knows what temperatures would exist under a canopy. Even experts disagree on the extent to which carbon dioxide warms the earth. Think how much more difficult it is to determine the warming caused thousands of years ago by a canopy of unknown thickness, reflectivity, content, and height above the earth.

**Venus.** We see canopies on other planets, such as Venus.

**Response:** Most planets have atmospheres, but none has a canopy. An atmosphere has contact with its planet, but a canopy is a distinct shell above the planet's atmosphere. Venus is shrouded by a thick, opaque atmosphere, consisting primarily of carbon dioxide and sulfuric acid. Venus does not have a layer of water, or any other relatively heavy substance, above its atmosphere.

**Genesis 7:11-12.** Some people believe that Genesis 1:6-8a obviously speaks of a water canopy that contributed to the flood. After all, Genesis 7:11-12 states that "... *the floodgates of the sky were opened. And the rain fell ...*" A lot of rain fell from some place.

**Response:** If this is true, similar biblical interpretations should predate Vail's in 1874. Where are they? Quite often it is hard to see alternatives once we have learned "the accepted explanation."

Genesis 7:11-12 actually says that "*all the fountains of the great deep burst open, and the floodgates of the sky were opened. And the rain fell ...*" Later, Genesis 8:2 states "*the fountains of the deep and the floodgates of the sky were closed, and the rain from the sky was restrained.*" These events were perhaps in cause-and-effect order.<sup>6</sup> That is, the fountains of the great deep caused extreme, torrential rain. Once the fountains stopped, this violent rain ceased. Then milder, more normal, rain fell. In other words, "*the rain from the sky was restrained.*"

The transliteration of the Hebrew word usually used for normal rain is *matar*. Violent rain is *geshem* (in Genesis, used only in 7:11 and 8:2). It is sometimes accompanied by high winds and huge hailstones that can destroy mortared walls (Ezekiel 13:11-13). The hydroplate theory (pages 86-119) explains this sequence in more detailed, physical terms. Most of us have not appreciated the explosiveness, magnitude, and power of "*the fountains of the great deep.*"

### Scientific Arguments Opposing a Canopy

**The Pressure Problem.** A vapor canopy holding only 40 feet of water would double the earth's atmospheric

pressure—making oxygen and nitrogen toxic to many animals, including humans.<sup>7</sup> This is why most vapor canopy theories limit the amount of water in their canopy to only 40 feet.

For a vapor canopy holding this amount of water, the high pressure at its base would require that its temperature exceed a scorching 220°F. Otherwise, the vapor would tend to condense into a liquid. A vapor canopy, whose base had that temperature, would radiate large amounts of heat to the earth's solid surface. People, plants, and animals would absorb so much heat from all directions above that life might not survive.<sup>8</sup> Those who believe a canopy would produce a globally mild climate have overlooked this detail.

Maintaining a canopy's 220°F temperature at night, or, worse yet, at the poles during the coolest season, adds a further difficulty. Yes, there were seasons before the flood. (See Genesis 1:14.)<sup>9</sup>

**The Heat Problem.** Canopy theories<sup>10</sup> have another major heat problem. The larger the canopy, the greater the heat problem.

**A Vapor Canopy.** Each gram of water vapor (steam) that condenses to a liquid, releases about 539 calories of heat. If  $6.22 \times 10^{21}$  grams of water fell from a vapor canopy, enough to form a layer of water only 40-feet thick around the world, the temperature of the water **and** atmosphere would, as a first approximation, rise

$$\frac{539 \frac{\text{cal}}{\text{gm}} \times 6.22 \times 10^{21} \text{ gm}}{\left( 5.1 \times 10^{21} \text{ gm} \times 0.242 \frac{\text{cal}}{\text{gm} \cdot \text{C}} \right) + \left( 6.22 \times 10^{21} \text{ gm} \times 1.0 \frac{\text{cal}}{\text{gm} \cdot \text{C}} \right)}$$

$$= 450 \text{ } ^\circ\text{C} = 810 \text{ } ^\circ\text{F}$$

where  $5.1 \times 10^{21}$  grams is the mass of the atmosphere, and 0.242 and 1.0 are the calories needed to raise one gram of air and one gram of liquid water (respectively) one degree centigrade. Unbearable temperatures remain even after we expand this analysis to include every scientifically conceivable way to remove this heat.<sup>11</sup> Besides, **40 feet of rain would not produce a global flood.**

**A Liquid or Ice Canopy.** For liquid or ice particles to remain above the earth's atmosphere, they must be in orbit. For anything to orbit the earth, its velocity must exceed 17,000 miles per hour (760,000 cm/sec). (As stated earlier, a layer of water only 40-feet thick contains  $6.22 \times 10^{21}$  grams of water.) Just as a spacecraft generates great heat as it reenters the atmo-

sphere, so also orbiting liquid or ice particles release vast amounts of heat as they fall from orbit. That heat energy equals the kinetic energy of the particles in orbit, which is

$$\frac{1}{2} \times 6.22 \times 10^{21} (760,000)^2 \times 2.39 \times 10^{-8} = 4.29 \times 10^{25} \text{ cal}$$

where  $2.39 \times 10^{-8}$  converts the units to calories. This heat would raise the atmosphere's temperature

$$\frac{4.29 \times 10^{25} \text{ cal}}{\left( 5.1 \times 10^{21} \text{ gm} \times 0.242 \frac{\text{cal}}{\text{gm}^\circ\text{C}} \right) + \left( 6.22 \times 10^{21} \text{ gm} \times 1.0 \frac{\text{cal}}{\text{gm}^\circ\text{C}} \right)}$$

$$= 5,700^\circ\text{C} = 10,000^\circ\text{F}$$

Even if a canopy began with the coldest ice possible (absolute zero) or if some of this heat were transferred elsewhere, insufferable heat would still result.<sup>12</sup>

If this ice were part of a spinning shell surrounding the earth, the problem remains. A rapidly spinning shell, providing enough centrifugal force to balance (as much as possible) the gravitational force, would still have too much kinetic energy. Once the shell collapsed, that energy would become heat which would "roast" all living things.

**The Light Problem.** A canopy having only 40 feet of water—in any form—would reflect, refract, absorb, or scatter most light trying to pass through it.

**Starlight.** Any visible stars would tend to be directly overhead because their light would have the shortest path through a canopy. Before the flood, people could apparently see stars, because stars were created for a purpose: "for signs, and for seasons, for days and years" (Genesis 1:14). Stars would only achieve their purpose if enough stars could be seen to identify seasonal variations. Therefore, one needs to see large star patterns, such as constellations—not just a few stars directly overhead. It is questionable whether one could have seen, recalled, and distinguished seasonally shifting star patterns through the filter of a 40-foot thick canopy, even on a moonless night.

**Sunlight.** A canopy would also reflect and absorb considerable sunlight. How then could many tropical plants, which require much sunlight today, have survived for centuries under a pre-flood canopy?

**The Nucleation Problem.** To form raindrops, tiny particles, called "condensation nuclei," must be present to initiate condensation. However, falling rain sweeps away

these nuclei and cleans the atmosphere. This reduces further condensation. Rain from a vapor canopy would actually choke off rain production.

Some claim volcanic eruptions, beginning suddenly at the time of the flood, continuously ejected condensation nuclei into the upper atmosphere. This proposal does not explain why volcanic eruptions suddenly began globally, then quickly and continuously distributed nuclei throughout the atmosphere for up to 40 days. Volcanic eruptions, rather than contributing to the flood, require special conditions that seem to be a consequence of the flood. (For an explanation, see pages 93 and 105.)

Both the nuclei problem and the heat problem limit the rain formed by condensation to a small, "less-than-a-flood" amount. It seems more likely that "geshem rain" was produced by the powerful jetting of the "fountains of the great deep" which caused torrential rain for "40 days and 40 nights."<sup>13</sup>

**The Greenhouse Problem.** Sunlight can penetrate the glass in a greenhouse. However, the heat in a greenhouse has much more difficulty radiating back out through the glass. This greenhouse effect traps heat inside the greenhouse, raising its temperature. All canopy theories have a greenhouse problem.

Also, if the temperature under a canopy rose, more water would evaporate from the earth's surface, including its oceans. More water vapor in the air means a greater greenhouse effect, a warmer atmosphere, and even more evaporation. This cycle would feed on itself, producing what is called "a runaway greenhouse effect." For example, Venus' atmosphere has experienced a runaway greenhouse effect. Venus is about 700°F hotter than one would otherwise expect for a planet that near the Sun. Earth is about 60°F hotter than it would be if there were no greenhouse effect.

Although the Institute for Creation Research (ICR) has been the best-known advocate of a vapor canopy during the last thirty years, ICR recently acknowledged a strong greenhouse effect would exist under a vapor canopy, raising "surface temperatures as high as 400° F." However, if many variables were chosen in the most favorable manner for a vapor canopy, "the water content of a canopy could be as much as [no more than] three feet of liquid water without the surface temperature reaching temperatures which would destroy life on the earth."<sup>14</sup>

**The Support Problem.** What supported the canopy?

**A Vapor or Liquid Canopy.** A vapor canopy would rapidly diffuse through the atmosphere. Once the vapor contacted the earth's surface, it would condense. A liquid canopy would quickly evaporate

and then diffuse through the atmosphere. Neither type of canopy could have survived for the many centuries before the flood.

**An Ice Canopy.** An ice canopy would vaporize into the vacuum of space, just as dry ice vaporizes at atmospheric temperature and pressure. Furthermore, ice is structurally weak. An ice shell could not withstand tidal stresses or meteoritic, cometary, or asteroidal impacts. A spinning ice shell could not withstand the powerful centrifugal forces at its equator and the crushing gravitational forces along its spin axis.

More dramatic yet, a solid ice shell, spinning or stationary, would crash into the earth. Imagine an arbitrary object *anywhere* inside a hollow, spherical shell. Every part of the shell acts gravitationally on the object. Sir Isaac Newton showed that the sum of all these gravitational tugs balances perfectly so that the object “feels” no *net* gravitational force from the shell. Therefore, the earth, inside a solid ice shell, would “float” relative to the shell. The slightest imperfection in the shell, the first meteorite to strike the shell, any electrical forces acting between the earth and shell, or the gravitational attraction of any other body in the solar system would cause the earth and its ice shell to drift toward each other and crash, destroying the shell.

**The Ultraviolet Problem.** Ozone in the earth’s upper atmosphere blocks the Sun’s destructive ultraviolet light, but a canopy surrounding the atmosphere would not be protected from ultraviolet light. Therefore, water in the canopy would dissociate into hydrogen and oxygen—effectively destroying that canopy.

**Final Thoughts.** Could there have been a canopy? Perhaps, in one of two ways. First, one could minimize most of these scientific problems by saying that the canopy was thin, perhaps inches thick. (Notice, the support and ultraviolet problems remain.) The thinner the canopy, the less severe most problems become. But what function would the canopy perform, and what hard, scientific evidence—not speculation—is there for claiming that a thin canopy could perform that function? Certainly, a thin canopy would not contribute to a global flood—the reason most accepted the canopy in the first place.

Second, one could also dismiss each of these scientific problems by saying that God performed a miracle. That may be true. Certainly He can; He has; and He sometimes does. However, miracles should not be proposed to “prop up” a scientific theory. (Some evolutionists mistakenly believe this is how creation science works.) As one sees

more and more “miracles” required by canopy theories, their credibility decreases, and the need for an alternate explanation increases.

## An Alternate Interpretation

Let us now consider another interpretation of Genesis 1:6-8a and related verses.

*The phrase “expanse of the heavens,” used four times in Genesis 1:14-20, means sky, atmosphere, or heaven—whichever is implied by the context. In Genesis 1:6-7, the term “expanse” (without “of the heavens” added) was the earth’s crust. Surface waters (oceans, seas, lakes, and rivers) were above this crust, and subterranean waters were below. The subterranean waters burst forth during the flood as the fountains of the great deep.*

Other verses support this interpretation, including Psalm 24:2, 33:7, 104:3, 136:5-9, and II Peter 3:5. (See page 268.) Psalm 136:5-9, a song of thanks to God, deserves a special comment. It describes three sequential events: (1) the heavens are made, (2) **the earth is spread out above the waters**, and (3) the Sun, Moon, and stars were made. This sequence is similar to the creation events of Day 1, Day 2, and Day 4. If the proposed interpretation is correct, then Psalm 136:5-9 precisely parallels the creation events of Days 1, 2, and 4.

Several ancient extrabiblical writings also state that the earth’s crust, when first created, divided liquid waters above from liquid waters below.<sup>15</sup>

If this picture of the newly created earth is correct, then it seems worthy of inclusion in the brief creation chapter of Genesis 1. However, if “the waters above” refers to a canopy containing less than one-half of 1% of the earth’s water, then why was one creation day and almost 10% of the creation chapter devoted to it?

## A Study of Some Key Hebrew Words

To understand Genesis 1:6-8a better, we must study the key words in bold below.

*Then God said, “Let there be an **expanse in the midst of the waters**, and let it **separate waters from waters**.” And God made the **expanse**, and **separated the waters** which were below the **expanse** from the **waters** which were above the **expanse**; and it was so. And God called the **expanse** heaven.*

**Waters (mayim).** This word means a liquid water, not a vapor or solid.<sup>16</sup> Had the water in Genesis 1:6-8 been a vapor, cloud, mist, or ice, other Hebrew words would have

been more appropriate. For example, ancient Hebrew had six words for cloud.

II Peter 3:5-6 also implies that this is liquid water. Peter used the same Greek word (ὕδατι) to describe the **liquid** water that flooded the earth and the water out of which the earth formed, an obvious reference to Genesis 1:6-7. The fact that **liquid** water was both above and below the expanse contradicts the vapor or ice canopy ideas but is consistent with the “expanse = crust” interpretation.

**Separate (badal).** This word implies a sharp division. Furthermore, the generally untranslated preposition “*ben*,” associated with “*badal*,” means “between.” It suggests an ordering (water, expanse, water) with no overlapping or gaps. Interfaces are also implied on each side of the expanse.<sup>17</sup> An atmosphere has no clearly defined upper boundary. These meanings oppose a vapor, liquid, or ice particle canopy lying above the atmosphere, because atmospheric gases would mix with the canopy.

**In the Midst of (tavek).** This word means between, within, among, inside, etc. Sometimes it even means “to bisect” or “in the center of.” Regarding Genesis 1:6-7, the respected Jewish commentator Cassuto stated, “It is true that in the Pentateuch, too, reference is made to the division of the primeval world-ocean into two halves, situated one above the other, ...”<sup>18</sup> (See also Genesis 15:10.) Rabbi Solomon Yitzchaki, in his famous eleventh century *Rashi Commentary*, stated that the expanse was “in the exact center of the waters.”<sup>19</sup> As we have seen, canopy theories place less than one-half of 1% of the earth’s water above the expanse and the rest below. (This is necessary to reduce the problems associated with heat, light, and pressure mentioned earlier.) Would it not seem strange to say that your scalp is “in the midst of” your body? According to the hydroplate theory, the crust of the pre-flood earth divided more equally the earth’s liquid waters.

**Expanse or Firmament (raqia).** The key Hebrew word in Genesis 1:6-8a is *raqia* (רָקִיעַ). It is translated “firmament” in the King James translation and “expanse” in most Hebrew dictionaries and modern translations. While its original meaning is uncertain, its root, *raqa* (רָקַע), means to spread out or to beat out as one would a malleable metal. It can also mean “plate.” This may explain why the Greek *Septuagint* translated *raqia* 16 out of 17 times with the Greek word *stereoma* (στερέωμα), which means “a firm or solid structure.” The Latin *Vulgate* used the Latin term “firmamentum,” which also implies solidness and firmness. Thus, the King James translators in 1611 A.D. coined the word “firmament.” Today, “firmament” is usually used poetically to mean sky, atmosphere, or heavens. Even in **modern** Hebrew, *raqia* means sky or

heavens. However, originally it probably meant something solid or firm that was spread out.

Finally, if *raqia* were related to a canopy, it seems strange that other Hebrew words, often translated as “canopy,” were not used in Genesis: *sukkah* (Ps 18:11 and II Sam 22:12), *chuppah* (Is 4:5), and *shaphrur* (Jer 43:10).

## Questions Raised by Genesis 1:8a

Why then, does Genesis 1:8a state, “*And God called the expanse heaven*”? Perhaps “heaven” **is** the proper translation for *raqia*, and the *Septuagint* and *Vulgate* translators incorrectly associated solidness with it. However, the similarities of *raqia* (רָקִיעַ) with *baqia* (בָּרִיעַ) and *raqa* (רָקַע) argue against this. (See page 261.) If *raqia* means “heaven,” four questions, or apparent textual contradictions, arise.

**Question 1:** Why was it necessary to follow the word *raqia* with the phrase “*of the heavens*” in Genesis 1:14, 15, 17, and 20? That would be redundant.

**Question 2:** If *raqia* implies a canopy, why wasn’t one of the three words that clearly means “canopy” used?

**Question 3:** Genesis 1:8a defines heaven **after** the word “heavens” was first used in Genesis 1:1. Normally a word’s meaning is understood from the context of its first usage. Furthermore, Genesis 1:1 says the heavens were created on the first day, while Genesis 1:8a (as commonly understood) says that the thing called “heaven” was made on the second day.

**Question 4:** If *raqia* means “heaven,” was water placed **above** “heaven,” as Genesis 1:7 states? If *raqia* means the atmosphere **in** which birds fly (Genesis 1:20), then how could the Sun, Moon, and stars be placed **in** the atmosphere (Genesis 1:14, 15, 17)? Because the Sun, Moon, and stars were placed **in** the *raqia* and the water of the canopy was placed **above** the *raqia*, then were all heavenly bodies **inside** the canopy?<sup>20</sup>

**Question 5:** Genesis 1:9 states, “*Let the waters below the heavens be gathered into one place, and let the dry land appear.*” Obviously, these are surface waters. Are “*the waters below the expanse*” (*raqia* in Genesis 1:7) the same as “*the [surface] waters below the heavens*” (*shamayim* in Genesis 1:9)?

Based on the proposed interpretation, the answer is “no.” (“*The waters below the expanse*” would be subterranean waters.) Based on all canopy theories, the answer would be “yes.” If so, why doesn’t Genesis 1:9 read, “Let the waters below the expanse ...”? This would clarify the matter and use the familiar phrase in Genesis 1:7. If canopy theories are correct, why does the phrase “*the waters below*” in

### What Does “Raquia” Mean?

The Hebrew word *raqia* is usually translated “expanse” or “firmament.” When it is immediately followed by “of the heavens” it means atmosphere, sky, outer space, or heaven. However, what does *raqia* standing alone mean? The Hebrew words most similar to *raqia* (רָקִיעַ) are its root *raqa* (רָקַע), *baqia* (בָּרַקַע), and *baqa* (בָּקַע). Each describes a deformed solid.

Table 16. All Biblical Meanings of Words Related to *Raqia*.

		PREFIX	
		baq	raq
SUFFIX	a	<i>baqa</i> (Strong's #1234): breached (3), break forth (1), break into (1), break open (1), break out (3), break through (1), breaks forth (1), broke through (2), broken into (2), breaks open (1), broken up (1), burst (2), burst open (1), cleave (1), dashed to pieces (1), divide (2), divided (3), hatch (2), hews (1), invaded (1), make a breach (1), rip up (1), ripped open (2), ripped up (1), shook (1), split (7), split open (1), splits (1), tear (1), tore (2), torn (2)	<i>raqa</i> (Strong's #7554): beaten (1), hammered out (2), plates (1), spread out (3), spreading out (1), stamp (1), stamped (2)  For usage and context see: Num 16:38, 39; II Sam 22:43; Job 37:18; Ps 136:42:6; Is 42:5, 44: 24; Jer 10:9; and Ez 6:11, 25:6.
	ia	<i>baqia</i> (Strong's #1233): breaches (1), fragments (1)  For usage and context see: Is 22:9 and Am 6:11.	<i>raqia</i> : Traditional Interpretation: atmosphere, outer space, sky, heaven Proposed Interpretation: a pressed out solid, such as the earth's crust

In 1890, James Strong catalogued all usages of every word in the Old and New Testament. He counted the frequency of each Hebrew and Greek word's specific English meanings. For example, the Hebrew word *baqa*, the 1234<sup>th</sup> word in Strong's Hebrew dictionary, is translated in the *New American Standard Bible* as “breached” three times, “split” seven times, etc. By studying all usages and contexts of a word and similar words, a difficult-to-translate word can be better understood.

The King James translators translated *raqia* as *firmament*, because it was thought to involve something firm. However, its specific meaning when Genesis was written is unknown. *Raqia* is obviously important, because the second creation day centered around it, just as the third

day dealt with plants, and the fourth day with heavenly bodies. What was the *raqia*? Certainly, *raqia* is one of the most mysterious words in the Bible.

By carefully studying English meanings of *raqa*, *baqa*, and *baqia* in Table 16, one can see that atmosphere, sky, outer space, and heaven do not relate to what we might guess *raqia* means. Instead, we get a picture of **a breakable solid being pressed out**. How can a solid be breakable but malleable or moldable?

Few realize that all rock 5 miles or more below the earth surface is “pressed out.” Imagine a perfectly vertical column of a typical rock 5 miles high. If the rock were “somewhat confined,” as explained in the next paragraph, the pressure at the column's base would be so great that it would slowly flow—like tar. Stacking more rock on top would cause even more flow at the bottom. If the column were 10 miles high, all the rock in the bottom half would try to flow. The rock at the very bottom would be squeezed like a tall stick of butter trying to support a ten-ton truck.

If our column were surrounded (pressed in from all sides) by similar, adjacent columns, the flow in the central column could go nowhere. The central column would have lateral support. Furthermore, if all columns were given lateral support by other columns, we would have the situation that actually exists in the top 10 miles of the earth's crust. At depths of 5 miles or greater, the rock wants to flow but can't, because the forces on all particles are essentially balanced in all directions. In other words, below 5 miles, the rock is sealed like highly compressed putty. Cracks cannot normally open up immediately above the subterranean chamber, which I estimate was almost 10 miles below the earth's surface. (See pages 86-119.)

This 10-mile-thick crust above the subterranean chamber would be a pressed out solid that was potentially breakable—a *raqia*. How could it break? A crack could not begin in the sealed, extremely compressed lower half. However, if internal pressure stretched the crust, a crack would form in the brittle top half. That crack, beginning at the earth's surface, could grow downward, then catastrophically split the “putty” in the bottom half—completely, in less than two seconds. What would happen then is the subject of Part II of this book, pages 84-215.

Genesis 1:9 need the additional words “*the heavens*”? Apparently, it would have pointed to the wrong waters—the waters below the earth's crust.

Genesis 1:8a, as typically translated and understood, seems inconsistent with many verses. Either (1) we do not understand the true meaning of *raqia* and we cannot be

equally literal in understanding the highlighted prepositions above, or (2) something is mistranslated or inserted.

Robert Hooke (1635-1703), one of the greatest scientists of all time,<sup>21</sup> proposed a solution. In a lecture before the famous Royal Society of London, Hooke proposed that the correct translation of Genesis 1:8a is “*Also, God called the heaven the firmament*” rather than the normal “*And God*

called the *firmament heaven*.” Hooke said there were **two firmaments**. The first, described in Genesis 1:6, was a solid expanse in the midst of the liquid waters that covered the earth. It was a spherical shell that divided equally, above and below, the earth’s liquid waters. The second firmament was the heavens (sky, atmosphere, or outer space). Whenever *raqia* was followed by “of the heavens,” as happens in the next four uses of *raqia* (Genesis 1:14, 15, 17, and 20), the second firmament is implied.<sup>22</sup>

Hooke’s proposal would answer questions 1-5 and harmoniously unite all related Bible verses and key Hebrew words. However, the most natural rendering of the Hebrew in Genesis 1:8a, **as presently understood**, does not support Hooke’s proposal. Because the oldest manuscript containing Genesis 1:8a dates back only 1070 years (*Aleppo Codex*, copied by Aaron ben Asher in 930 A.D.), finding an even older manuscript might clarify this matter.

Let’s say the strongest possible case was made against Hooke’s proposal. That is, **the original** manuscript of Genesis 1 was found, translated perfectly, and Hooke was shown to be wrong. Let’s also say that my hunch that “*raqia*” and “*raqia* of the heavens” refer to two different things could not be proven. In that worst case situation, the choices would be the two problematic interpretations shown in Table 17. The choice is yours.

Table 17. Two Interpretations

Interpretation	Translation	Problems
Traditional	expanse = atmosphere, outer space, heaven, etc.	Questions 1-5 Scientific Issues Key Hebrew Words
Proposed	expanse of the heavens = space, etc. expanse [only] = earth’s crust	Genesis 1:8a

## Mythology and Canopies

Vail’s case for a canopy rested largely on the mythology of the Greeks, Romans, Egyptians, and other ancient cultures. He argued that a real canopy, millions of years ago, produced these myths. Vail wrote,

*I have been told again and again that the canopy idea is weak because it is founded on mythology. I can only protest that it is not founded on mythology, on the contrary mythology is largely founded on the canopy, fossilized in human thought [thought]. The canopy as a watery heaven close to the earth existed for untold millions of years before a myth ever germinated.*<sup>23</sup>

We can all agree with Vail that ancient mythology and today’s canopy theories are linked. Which came first? If the best canopy theory cannot overcome the scientific problems mentioned earlier, then a canopy did not produce or precede the ancient myths. Myths probably produced canopy theories.

## Conclusion

Arguments for the various canopy theories do not stand up when examined closely. These theories also contain many biblical and scientific problems, such as those associated with pressure, heat, light, support, condensation nuclei, and ultraviolet light. Even the best-known canopy advocates privately acknowledge these problems. Canopy theories have misled many, delaying understanding of the flood. The flood water came from below, not above. Failure to understand this has caused many to doubt the historical accuracy of the flood account, and, therefore, the Bible itself. Without the flood to explain the fossils buried in the earth’s sedimentary layers, the theory of organic evolution fills the vacuum—an explanation that also removes or minimizes need for the Creator.

## References and Notes

1. Isaac Newton Vail published many pamphlets on his canopy theory, starting with *Waters Above the Firmament* in 1874. Other titles included: *The Misread Record* (also published under the title *The Deluge and Its Cause*), *Eden’s Flaming Sword*, *Ring of Truth*, *The Heavens and Earth of Prehistoric Man*, *Canopy Skies of Ancient Man*, *A Glance at Comparative Mythology*, *Annular World Evolution*, and others. Most of these titles have been republished by Donald L. Cyr, *Waters above the Firmament* (Santa Barbara, California: Stonehenge Viewpoint, 1988). In 1902, Vail also published a 400-page book entitled, *The Earth’s Annular System*. However, it was John C. Whitcomb, Jr. and Henry M. Morris who popularized Vail’s canopy theory in *The Genesis Flood* (Philadelphia, Pennsylvania: Presbyterian and Reformed Publishing Company, 1961).
2. Vail claimed that after the canopy collapsed, the earth was no longer shielded from the Sun’s radiation, so life spans decreased (Vail, pp. 51, 79-84). If so, someone, even after the time of Abraham, should have noticed that people living indoors or further from the equator lived longer.
3. Joseph C. Dillow, *The Waters Above* (Chicago: Moody Press, 1981), p. 170.
4. *Ibid.*, p. 170.
5. *Ibid.*, p. 222.

6. This also occurs in Proverbs 3:19-20: *“The Lord by wisdom founded the earth; by understanding He established the heavens. By His knowledge the deeps were broken up, and the skies dripped with dew.”* The same Hebrew word, *baqa* (בָּקָה), is used for “broken up” and “burst open” in Proverbs 3:20 and Genesis 7:11. *Baqa* describes a violent and complete splitting, sometimes of the earth’s crust (Numbers 16:31, Micah 1:4, Zechariah 14:4). Isaiah 34:15 and 59:5 use *baqa* to describe the breaking of an egg shell by internal pressure as a baby bird exits. All of this aptly describes events of the hydroplate theory—the global rupture (splitting) of the earth’s crust by internal pressure just before water erupted.
7. Doubling atmospheric pressure doubles the blood’s oxygen content. This produces a disease in unborn or premature children, called retrolental fibroplasia, in which an opaque membrane forms behind the lens of the eye, resulting in blindness. This also occurs in mice and other species.  
  
Increased ambient pressure also results in excess carbon dioxide in the blood. Oxygen and nitrogen toxicities increase significantly. The problem is aggravated at high work levels and for the elderly and ill. [Personal communication with Dr. Daniel J. O’Rourke, MD, 11 December 1994.]
8. The Sun’s surface radiates at an effective temperature of 10,000°F, but only occupies 1/10,000th of the sky’s area. A 220°F canopy, while not nearly as hot, would radiate from the entire sky. Taking only these factors into consideration, a vapor canopy by itself would provide 60% as much heat as the Sun. Other complex factors might remove some of this heat.
9. Genesis 1:14 says the heavenly bodies were created *“... for seasons, and for days and years.”* Therefore, the earth’s axis was tipped relative to the earth’s orbital plane, because only by being tipped can seasonal shifts in star patterns and temperature variations occur.
10. Not addressed are canopy theories that provide no scientific details or data to support speculative claims.
11. For example, two other ways to remove this heat might be to radiate it into outer space or to conduct it into the earth. Both processes are slow, removing relatively little heat in the short time available.
12. Some have proposed that a huge, icy comet struck the earth, causing a global flood and an ice age. Those proposals ignore this same heat problem. Actually, such a comet would have more kinetic energy than an ice or water canopy of equal mass. Therefore, the temperature increase would be greater.
13. After 40 days and 40 nights the *“geshem rain”* stopped (Genesis 7:12). However, the flood water rose until the 150th day, when it covered all the preflood mountains (Genesis 7:19-24). Apparently, after 40 days, the layer of water rising on the earth blanketed and suppressed the jetting of the

fountains of the great deep. Nevertheless, high pressure subterranean water continued to gush out and add to the rising flood waters until the 150th day. On that day, the fountains were closed (Genesis 8:2) by the hydroplates settling onto the floor of the subterranean water chamber, pinching shut the outwardly flowing water. (See pages 86-119 for the scientific details supporting this explanation.)

14. “Numerical Climate Modeling at ICR,” *Acts & Facts*, April 1998, p. 2.
15. Ancient extrabiblical writings, although not having the authority of biblical passages, also support the idea that the earth was created with water under the crust.

The book, *The First Book of Adam and Eve*, states in verse 70:15 that *“God ... established the earth upon the waters.”* *The Secrets of Enoch*, another apocryphal book, also known as *II Enoch*, says in verse 47:5, *“The Lord ... fixed the earth upon the waters.”* [See Rutherford H. Platt, Jr., editor, *The Forgotten Books of Eden* (U.S.A.: Alpha House, 1927), pp. 50, 98.]

*II Esdras*, which was part of most Old Testaments until 1534, retells the same creation story found in Genesis 1. However, in *II Esdras* 6:41-42 the second and third days are described differently by Ezra.

*On the second day you created the angel of the firmament, and commanded him to make a dividing barrier between the waters, one part withdrawing upwards and the other remaining below. On the third day you ordered the waters to collect in a seventh part of the earth; the other six parts you made into dry land, ...* [emphasis added]

In other words, the earth’s waters immediately after the creation were divided into two parts, perhaps equal parts. One part was below a barrier, and the other part was above. The earth’s seas only covered 1/7th of the earth’s surface. Therefore, those surface waters were probably much less than today’s surface waters which cover 70% of the earth. Consequently, considerable water would have been on the other side of the barrier—much more than any canopy could have held. However, subterranean chambers could have held that amount.

Most definitive is the word “barrier.” It hardly seems to describe the atmosphere, sky, heaven, or outer space. It aptly describes the earth’s crust that vertically divided the earth’s liquid water. *II Esdras* 16:58 reinforces this: *“He has shut up the sea in the midst of the waters, and by His command He has hung the earth upon the water.”*

16. Stanley V. Udd, “The Canopy and Genesis 1:6-8,” *Creation Research Society Quarterly*, Vol. 12, September 1975, pp. 90-93.  
◆ Dillow, p. 58.
17. Udd, p. 91.

18. Umberto Cassuto, *A Commentary on the Book of Genesis, From Adam to Noah*, translated by Israel Abrahams (Jerusalem: Magnes, The Hebrew University, 1961), p. 32.
19. M. Rosenbaum and A. M. Silberman, *Rashi Commentary on the Pentateuch*, Vol. 1 (1930), p. 4.
20. A few people have proposed that *raqia* is the universe, and the waters above the expanse (*raqia*) is water surrounding the universe. This places all the heavenly bodies *in* the expanse of the heavens, which agrees with Genesis 1:14-17, but it contradicts Genesis 1:20, which has the birds flying in the expanse.

Surrounding the universe with water assumes the universe is finite, when in fact its size may be infinite, or it may take on an even more exotic geometry. Let us assume the edge of the universe is only 10 billion light years away, and absolutely nothing is outside it, even empty space. Surrounding the universe with as much water as the earth contains ( $1.43 \times 10^{24}$  grams) would spread one gram over every  $3 \times 10^{22}$  square miles—or place adjacent water molecules one mile apart!

Pure water in the near vacuum of space would clearly be water vapor, not the liquid water the Bible describes above the expanse. What purpose would this water fulfill? Certainly, it would have played no role in the flood.

21. Hooke's scientific accomplishments rank near those of the greatest scientist of all time—his contemporary, competitor, and countryman, Isaac Newton. In fact, some of Newton's so-called discoveries (such as important aspects of the Law of Gravitation) were announced years earlier by Hooke. Hooke is best known for "Hooke's law" and his pioneering work in the field of elasticity. He discovered plant cells, many microorganisms, and Jupiter's spot; he made several important geological observations, first argued that comets are periodic, built the first Gregorian telescope; and invented the spring driven clock, the universal joint, and the sextant.
22. Ellen Tan Drake, *Restless Genius: Robert Hooke and His Earthly Thoughts* (New York: Oxford University Press, 1996), pp. 300-309.
23. Isaac Newton Vail, *The Misread Record* (Seattle, Washington: The Simplex Publishing Company, 1921), pp. 36, 37.