

Noah's Ark

A biblical and scientific look at the Genesis account



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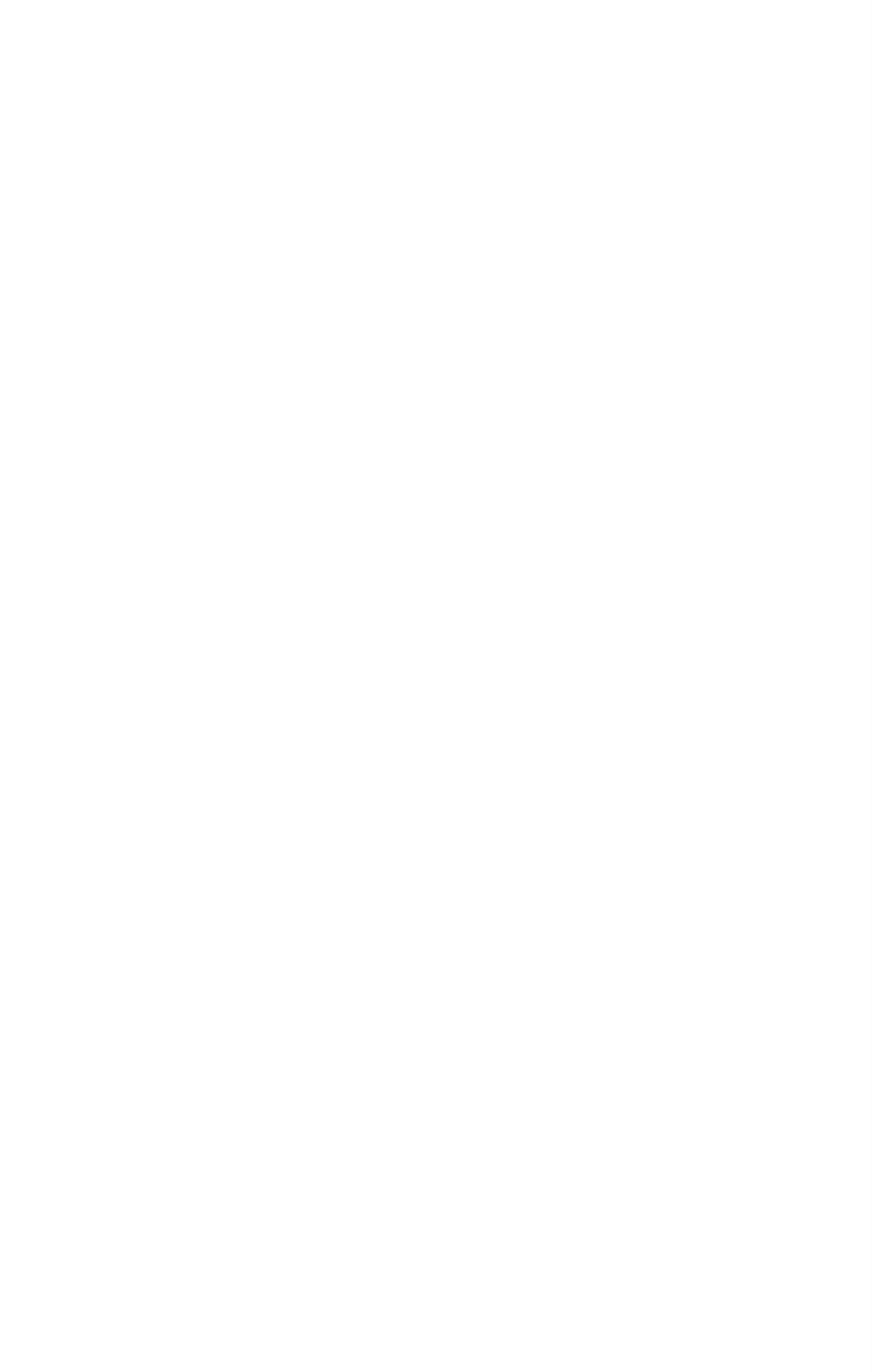
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Introduction

The idea of a man building a giant boat to rescue humanity has been the subject of much interest throughout human history. From ark-themed bathrooms and nursery accessories to irreverent portrayals in modern films, Noah and his ark have been represented in many different ways. The ark is a common target for those who wish to mock the Bible or turn its historical accounts into fables with an element of moral teaching. Rather than taking the account in the Bible at face value, many allow a modern “scientific” mindset to impact their understanding of Scripture.

But what did the ark really look like? Does the Bible shed any light on the size or construction of the ark? How does the ark compare to the ships we have today? How did Noah round up all of the animals on the earth? Has Noah’s ark been found? Is there any symbolism in the ark? All of these questions, and more, will be answered as you explore this book.

When you look to Scripture as the authoritative writing that it is, you would expect what you see in the world around you to confirm those truths. An understanding of the size and proportions of the ark and the biblical classification of the created kinds are supported by what we observe in nature. When we look at the evidence through the lens of Scripture, what we see in the world supports the factual nature of the account of Noah and the ark as recorded.



Was There Really a Noah's Ark?

by Ken Ham & Tim Lovett

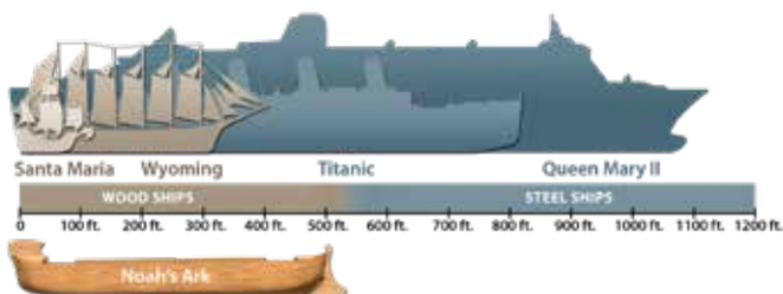
The account of Noah and the ark is one of the most widely known events in the history of mankind. Unfortunately, like other Bible accounts, it is often taken as a mere fairy tale.

The Bible, though, is the true history book of the universe, and in that light, the most-asked questions about the ark and flood of Noah can be answered with authority and confidence.

How Large Was Noah's Ark?

The length of the ark 300 cubits, its breadth 50 cubits, and its height 30 cubits. (Genesis 6:15)

Unlike many whimsical drawings that depict the ark as some kind of overgrown houseboat (with giraffes sticking out the top), the ark described in the Bible was a huge vessel. Not until the late 1800s was a ship built that exceeded the capacity of Noah's ark.



The dimensions of the ark are convincing for two reasons: the proportions are like that of a modern cargo ship, and it

is about as large as a wooden ship can be built. The cubit gives us a good indication of size.¹ Using the most likely cubit length, an ancient royal cubit of at least 20.4 inches (0.518 m), we know that the ark must have been no less than 510 feet (155 m) long, 85 feet (26 m) wide, and 51 feet (16 m) high. In the Western world, wooden sailing ships never got much longer than about 330 feet (100 m), yet the ancient Greeks built vessels at least this size 2,000 years earlier. China built huge wooden ships in the 1400s that may have been as large as the ark. The biblical ark is one of the largest wooden ships of all time—a mid-size cargo ship by today's standards.

How Could Noah Build the Ark?

The Bible does not tell us that Noah and his sons built the ark by themselves. Noah could have hired skilled laborers or had relatives, such as Methuselah and Lamech, help build the vessel. However, nothing indicates that they could not—or that they did not—build the ark themselves in the time allotted. The physical strength and mental processes of men in Noah's day was at least as great (quite likely even superior) to our own.² They certainly would have had efficient means for harvesting and cutting timber, as well as for shaping, transporting, and erecting the massive beams and boards required.

If one or two men today can erect a large house in just 12 weeks, how much more could three or four men do in a few years? Adam's descendants were making complex musical instruments, forging metal, and building cities—their tools, machines, and techniques were not primitive.

History has shown that technology can be lost. In Egypt, China, and the Americas, the earlier dynasties built more impressive buildings or had finer art or better science. Many so-called modern inventions turn out

to be reinventions, like concrete, which was used by the Romans.

Even accounting for the possible loss of technology due to the flood, early post-flood civilizations possessed all the engineering know-how necessary for a project like Noah's ark. People were sawing and drilling wood in Noah's day, only a few centuries before the Egyptians were sawing and drilling granite; it is very reasonable! The idea that more primitive civilizations are further back in time is an evolutionary concept.

In reality, when God created Adam, he was perfect. Today, the individual human intellect has suffered from 6,000 years of sin and decay. The sudden rise in technology in the last few centuries has nothing to do with increasing intelligence—it is a combination of publishing and sharing ideas, and the spread of key inventions that became tools for investigation and manufacturing. One of the most recent tools is the computer, which compensates a great deal for our natural decline in mental performance and discipline, since it permits us to gather and store information as perhaps never before.

How Could Noah Round Up So Many Animals?

Of the birds according to their kinds, and of the animals according to their kinds, of every creeping thing of the ground, according to its kind, two of every sort shall come in to you to keep them alive. (Genesis 6:20)

This verse tells us that Noah didn't have to search or travel to faraway places to bring the animals on board. The world map was completely different before the flood, and on the basis of Genesis 1, there may have been only one continent. The animals simply arrived at the ark as if called by a

“homing instinct” (a behavior implanted in the animals by their Creator) and marched up the ramp all by themselves.

Though this was probably a supernatural event (one that cannot be explained by our understanding of nature), compare it to the impressive migratory behavior we see in some animals today. We are still far from understanding all the marvelous animal behaviors exhibited in God’s creation: the migration of Canada geese and other birds, the amazing flights of monarch butterflies, the annual travels of whales and fish, hibernation instincts, earthquake sensitivity, and countless other fascinating capabilities of God’s animal kingdom.

Were Dinosaurs on Noah’s Ark?

The history of God’s creation (told in Genesis 1 and 2) tells us that all the land-dwelling creatures were made on day six of creation week—the same day God made Adam

and Eve. Therefore, it is clear that dinosaurs (being land animals) were made with man.



Even the largest full-grown creatures were once small!

Also, two of every kind (seven of some) of land animal boarded the ark. Nothing indicates that any of the land animal kinds were already extinct before the flood.

Besides, the description of “Behemoth” in chapter 40 of the book of Job (Job lived after the flood) only fits with something like a sauropod dinosaur. The ancestor of Behemoth must have been onboard the ark.³

We also find many dinosaurs that were trapped and fossilized in flood sediment. Widespread legends of encounters with dragons give another indication that at least some dinosaurs survived the flood. The only way this could happen is if they were on the ark.

Juveniles of even the largest land animals do not present a size problem, and, being young, they have their full breeding life ahead of them. Yet most dinosaurs were not very large at all—some were the size of a chicken (although absolutely no relation to birds, as many evolutionists are now saying). Most scientists agree that the average size of a dinosaur is actually the size of a bison.

For example, God most likely brought Noah two young adult sauropods (e.g., apatosaur), rather than two full-grown sauropods. The same goes for the elephant kind, giraffe kind, and other animals that grow to be very large. However, there was adequate room for most fully grown adult animals anyway.

As far as the number of different types of dinosaurs, it should be recognized that, although there are hundreds of names for different varieties (species) of dinosaurs that have been discovered, there are probably only 60–80 actual different kinds.

How Could a Flood Destroy Every Living Thing?

And all flesh died that moved on the earth, birds, livestock, beasts, all swarming creatures that swarm on the earth, and all mankind. Everything on the dry land

in whose nostrils was the breath of life died. (Genesis 7:21–22)

Noah's flood was much more destructive than any 40-day rainstorm ever could be. Scripture says that the "fountains of the great deep" broke open. In other words, earthquakes, volcanoes, and geysers of molten lava and scalding water were squeezed out of the earth's crust in a violent, explosive upheaval. These fountains were not stopped until 150 days into the flood—so the earth was literally churning underneath the waters for about five months! The duration of the flood was extensive, and Noah and his family were aboard the ark for around a year.

Relatively recent local floods, volcanoes, and earthquakes—though clearly devastating to life and land—are tiny in comparison to the worldwide catastrophe that destroyed "the world that then existed" (2 Peter 3:6). All land animals and people not on board the ark were destroyed in the floodwaters—billions of animals were preserved in the great fossil record we see today.

How Could the Ark Survive the Flood?

The description of the ark is very brief—Genesis 6:14–16. Those three verses contain critical information, including overall dimensions, but Noah was almost certainly given more detail than this. Other divinely specified constructions in the Bible are meticulously detailed, like the descriptions of Moses' tabernacle or the temple in Ezekiel's vision.

The Bible does not say the ark was a rectangular box. In fact, Scripture gives no clue about the shape of Noah's ark other than the proportions—length, width, and depth. Ships have long been described like this without ever implying a block-shaped hull.

Moses used the obscure term *tebah*, a word that is only used again for the basket that carried baby Moses (Exodus 2:3). One was a huge wooden ship and the other a tiny wicker basket. Both float, both rescue life, and both are covered. But the similarity ends there. We can be quite sure that the baby basket did not have the same proportions as the ark, and Egyptian baskets of the time were typically rounded. Perhaps *tebah* means “lifeboat.”

For many years, biblical creationists have simply depicted the ark as a rectangular box. This shape helped illustrate its size while avoiding the distractions of hull curvature. It also made it easy to compare volume. By using a short cubit and the maximum number of animal “kinds,” creationists, as we’ve seen, have demonstrated how easily the ark could fit the payload.⁴ At the time, space was the main issue—other factors were secondary.

However, the next phase of research investigated sea-keeping (behavior and comfort at sea), hull strength, and stability. This began with a Korean study performed at the world-class ship research center (KRISO) in 1992.⁵ The team of nine KRISO researchers was led by Dr. Hong, who is now director-general of the research center.

The study confirmed that the ark could handle waves as high as 98 feet (30 m) and that the proportions of the biblical ark are near optimal—an interesting admission from Dr. Hong, who believed evolutionary ideas. The study combined analysis, model wave testing, and ship standards, yet the concept was simple: compare the biblical ark with 12 other vessels of the same volume but modified in length, width, or depth. Three qualities were measured—stability, hull strength, and comfort.

Ship Qualities Measured in the 1992 Korean Study

While Noah's ark was an average performer in each quality, it was among the best designs overall. In other words, the proportions show a careful design balance that is easily lost when proportions are modified the wrong way. It is no surprise that modern ships have similar proportions—those proportions work.

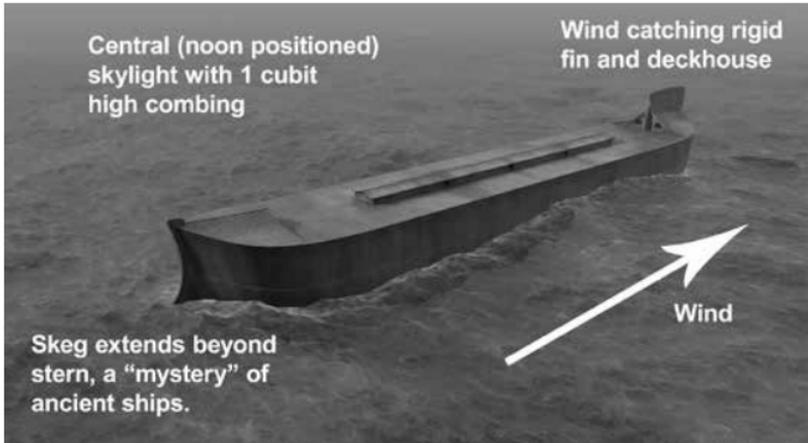
Interesting to note is the fact that this study makes nonsense of the claim that Genesis was written only a few centuries before Christ and was based on flood legends such as the *Epic of Gilgamesh*.⁶ The Babylonian ark is a cube shape, something so far from reality that even the shortest hull in the Korean study was not even close. But we would expect mistakes from other flood accounts, like that of Gilgamesh, as the account of Noah would have been distorted as it was passed down through different cultures.

Yet one mystery remained. The Korean study did not hide the fact that some shorter hulls slightly outperformed the biblical Noah's ark. Further work by Tim Lovett, one author of this chapter, and two naval architects, Jim King and Dr. Allen Magnuson, focused attention on the issue of broaching—being turned sideways by the waves.

How do we know what the waves were like? If there were no waves at all, stability, comfort, or strength would be unimportant, and the proportions would not matter. A shorter hull would then be a more efficient volume, taking less wood and less work. However, we can take clues from the proportions of the ark itself. The Korean study had assumed waves came from every direction, giving shorter hulls an advantage. But real ocean waves usually have a dominant direction due to the wind, favoring a short, wide hull even more.

Another type of wave may also have affected the ark during the flood—tsunamis. Earthquakes can create tsunamis that devastate coastlines. However, when a tsunami travels in deep water it is imperceptible to a ship. During the flood, the water would have been very deep—there is enough water in today’s oceans to cover the earth to a depth of about 1.7 miles (2.7 km). The Bible states that the ark rose “high above the earth” (Genesis 7:17). Launched from high ground by the rising floodwaters, the ark would have avoided the initial devastation of coastlines and low-lying areas and remained safe from tsunamis throughout the voyage.

After several months at sea, God sent a wind (Genesis 8:1), which could have produced very large waves since these waves can be produced by a strong, steady wind. Open-water testing confirms that any drifting vessel will naturally turn side-on to the waves (broach). With waves approaching the side of the vessel (beam sea), a long vessel like the ark would be trapped in an uncomfortable situation—in heavy weather it could become dangerous. This could be overcome, however, by the vessel catching the wind (Genesis 8:1) at the bow and catching the water at the stern—aligning itself like a wind vane. These features



appear to have inspired a number of ancient ship designs. Once the ark points into the waves, the long, ship-like proportions create a more comfortable and controlled voyage. Traveling slowly with the wind, it had no need for speed, but the Bible does say the ark moved about on the surface of the waters (Genesis 7:18).

However, not all waves are aligned with the local wind; the ark may also encounter distant swells from any direction. The first line of defense comes from the excellent proportions of the ark, confirmed in a study by a world-class ship research center in Korea. In addition, the outer keels that provide protection on land also improve roll damping in the waves, much like the bilge keels of a modern ship. So it is prudent for Noah to put lots of ancient ingenuity into the project of his life.

Compared to a ship-like bow and stern, blunt ends are not as strong, have edges that are vulnerable to damage during launch and beaching, and give a rougher ride. Since the Bible gives proportions like that of a true ship, it makes sense that it should look and act ship-like. The below design is an attempt to flesh out the biblical outline using real-life experiments and archaeological evidence of ancient ships.

While Scripture does not point out a wind-catching feature at the bow, the abbreviated account we are given in Genesis makes no mention of drinking water, the number of animals, or the way they got out of the ark either.

Nothing in this newly depicted ark contradicts Scripture—in fact, it shows how accurate Scripture is since the proportions are so realistic! (For more information on the design of the ark, see chapter 3, “Thinking Outside the Box.”)

Where Did All the Water Go?

And the waters receded from the earth continually. At the end of 150 days the waters had abated. (Genesis 8:3)

Simply put, the water from the flood is in the oceans and seas we see today. Three-quarters of the earth's surface is covered with water.

As even secular geologists observe, it does appear that the continents were at one time “together” and not separated by the vast oceans of today. The forces involved in the flood were certainly sufficient to change all of this.

Scripture indicates that God formed the ocean basins, raising the land out of the water, so that the floodwaters returned to a safe place. (Some theologians believe Psalm 104:7–9 may refer to this event.) Some creation scientists believe this breakup of the continent was part of the mechanism that ultimately caused the flood.⁷

Because of Genesis 10:25, some have speculated that the continental break occurred during the time of Peleg. However, this division is mentioned in the context of the tower of Babel's language division of the whole earth (Genesis 10–11). So the context points to a dividing of the languages and people groups, not the land breaking apart.

If there were a massive movement of continents during the time of Peleg, there would have been another worldwide flood. The Bible indicates that the mountains of Ararat existed for the ark to land in them (Genesis 8:4)—so the Indian-Australian Plate and Eurasian Plate had to have already collided, indicating that the continents had already shifted prior to Peleg.

Was Noah's Flood Global?

And the waters prevailed so mightily on the earth that all the high mountains under the whole heaven were covered. The waters prevailed above the mountains, covering them fifteen cubits deep. (Genesis 7:19–20)

Many Christians today claim that the flood of Noah's time was only a local flood. These people generally believe in a local flood because they have accepted the widely believed evolutionary history of the earth, which interprets fossil layers as the history of the sequential appearance of life over millions of years.⁸

Scientists once understood the fossils—which are buried in water-carried sediments of mud and sand—to be mostly the result of the great flood. Those who now accept millions of years of gradual accumulation of fossils have, in their way of thinking, explained away the evidence for the global flood. Hence, many compromising Christians insist on a local flood.

Secularists deny the possibility of a worldwide flood at all. If they would think from a biblical perspective, however, they would see the abundant evidence for the global flood. As someone once quipped, “I wouldn't have seen it if I hadn't believed it.”

Those who accept the evolutionary time frame, with its fossil accumulation, also rob the fall of Adam of its serious consequences. They put the fossils, which testify of disease, suffering, and death, before Adam and Eve sinned and brought death and suffering into the world. In doing this, they also undermine the meaning of the death and resurrection of Christ. Such a scenario also robs all meaning from God's description of his finished creation as “very good.”

If the flood only affected the area of Mesopotamia, as some claim, why did Noah have to build an ark? He could have walked to the other side of the mountains and escaped. Most importantly, if the flood were local, people not living in the vicinity of the flood would not have been affected by it. They would have escaped God's judgment on sin.

In addition, Jesus believed that the flood killed every person not on the ark. What else could Christ mean when He likened the coming world judgment to the judgment of "all" men in the days of Noah (Matthew 24:37–39)?

In 2 Peter 3, the coming judgment by fire is likened to the former judgment by water in Noah's flood. A partial judgment in Noah's day, therefore, would mean a partial judgment to come.

If the flood were only local, how could the waters rise to 20 feet (6 m) above the mountains (Genesis 7:20)? Water seeks its own level—it could not rise to cover the local mountains while leaving the rest of the world untouched.

Even what is now Mt. Everest was once covered with water and uplifted afterward.⁹ If we even out the ocean basins and flatten out the mountains, there is enough water to cover the entire earth by about 1.7 miles (2.7 km).¹⁰ Also important to note is that, with the leveling out of the oceans and mountains, the ark would not have been riding at the height of the current Mt. Everest, thus no need for such things as oxygen masks either.

There's more. If the flood were a local flood, God would have repeatedly broken his promise never to send such a flood again. God put a rainbow in the sky as a covenant between God and man and the animals that he would never repeat such an event. There have been huge local floods in recent times (e.g., in Bangladesh, Indonesia, and

Japan), but never has there been another global flood that killed all life on the land.

Where Is the Evidence in the Earth for Noah's Flood?

For they deliberately overlook this fact, that the heavens existed long ago, and the earth was formed out of water and through water by the word of God, and that by means of these the world that then existed was deluged with water and perished. (2 Peter 3:5–6)

Evidence of Noah's flood can be seen all over the earth, from seabeds to mountaintops. Whether you travel by car, train, or plane, the physical features of the earth's terrain clearly indicate a catastrophic past, from canyons and craters to coal beds and caverns. Some layers of strata extend across continents, revealing the effects of a huge catastrophe.

The earth's crust has massive amounts of layered sedimentary rock, sometimes miles (kilometers) deep! These layers of sand, soil, and material—mostly laid down by water—were once soft like mud, but they are now hard stone. Encased in these sedimentary layers are billions of dead things (fossils of plants and animals) buried very quickly. The evidence all over the earth is staring everyone in the face.

Where Is Noah's Ark Today?

The ark landed in mountains. The ancient name for these mountains could refer to several areas in the Middle East, such as Mt. Ararat in Turkey or other mountain ranges in neighboring countries.

Mt. Ararat has attracted the most attention because it has permanent ice, and some people report to have seen the

ark. Many expeditions have searched for the ark there. There is no conclusive evidence of the ark's location or survival; after all, it landed on the mountains about 4,500 years ago. Also, it could have easily deteriorated, been destroyed, or been used as lumber by Noah and his descendants.

Some scientists and Bible scholars, though, believe the ark could indeed be preserved—perhaps to be providentially revealed at a future time as a reminder of the past judgment and the judgment to come, although the same could be said for things like the ark of the covenant or other biblical icons. Jesus said, “If they do not hear Moses and the Prophets, neither will they be convinced if someone should rise from the dead” (Luke 16:31).

The ark is unlikely to have survived without supernatural intervention, but this is neither promised nor expected from Scripture. However, it is a good idea to check if it still exists. (For more information on the search for Noah's ark, see page 69, “Has Noah's Ark Been Found?”).

Why Did God Destroy the Earth That He Had Made?

The LORD saw that the wickedness of man was great in the earth, and that every intention of the thoughts of his heart was only evil continually. But Noah found favor in the eyes of the LORD. (Genesis 6:5, 8)

These verses speak for themselves. Every human being on the face of the earth had turned after the wickedness in their own hearts, but Noah, because of his righteousness before God, was spared from God's judgment, along with his wife, their sons, and their wives. As a result of man's wickedness, God sent judgment on all mankind. As

harsh as the destruction was, no living person was without excuse.

God also used the flood to separate and to purify those who believed in him from those who didn't. Throughout history and the Bible, this cycle has taken place time after time: separation, purification, judgment, and redemption.

Without God and a true knowledge and understanding of Scripture, which provides the true history of the world, man is doomed to repeat the same mistakes over and over again.

How Is Christ Like the Ark?

For the Son of Man came to save the lost. (Matthew 18:11)

As God's Son, the Lord Jesus Christ is like Noah's ark. Jesus came to seek and save the lost. Just as Noah and his family were saved by the ark, rescued by God from the floodwaters, so anyone who believes in Jesus as Lord and Savior will be spared from the coming final judgment of mankind, rescued by God from the fire that will destroy the earth after the last days (2 Peter 3:7).

Noah and his family had to go through a doorway into the ark to be saved, and the Lord shut the door behind them (Genesis 7:16). So we too have to go through a "doorway" to be saved so that we won't be eternally separated from God. The Son of God, Jesus, stepped into history to pay the penalty for our sin of rebellion. Jesus said, "I am the door. If anyone enters by me, he will be saved and will go in and out and find pasture" (John 10:9).

Ken Ham is the CEO and founder of Answers in Genesis—US, the highly acclaimed Creation Museum, and the world-renowned Ark Encounter. He is one of the most in-demand Christian speakers in North America.

Tim Lovett earned his degree in mechanical engineering from Sydney University (Australia) and was an instructor for 12 years in technical college engineering courses. Tim has studied the flood and the ark for many years and is widely recognized for his research on the design and structure of Noah's ark. He helped design the Ark at the Ark Encounter in Williamstown, Kentucky.

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- 1 The cubit was defined as the length of the forearm from elbow to fingertip. Ancient cubits vary anywhere from 17.5 inches (45 cm) to 22 inches (56 cm), the longer sizes dominating the major ancient constructions. Despite this, even a conservative 18-inch (46 cm) cubit describes a sizeable vessel.
 - 2 For the evidence, see Donald Chittick, *The Puzzle of Ancient Man* (Newberg, OR: Creation Compass, 1998), and Don Landis, Ed., *The Genius of Ancient Man* (Green Forest, AR: Master Books, 2012). These books detail evidence of man's intelligence in early post-flood civilizations.
 - 3 For some remarkable evidence that dinosaurs have lived until relatively recent times, see chapter 12 of *The New Answers Book 1* (Green Forest, AR: Master Books, 2006). Also read Ken Ham, *The Great Dinosaur Mystery Solved* (Green Forest, AR: Master Books, 2000). Also visit AnswersInGenesis.org/go/dinosaurs.
 - 4 To read a thorough study on this research, see *Noah's Ark: A Feasibility Study* by John Woodmorappe (see Ref. 4)
 - 5 Seok Won Hong et al., "Safety Investigation of Noah's Ark in a Seaway," *TJ* 8 no. 1 (1994): 26-36, AnswersInGenesis.org/tj/v8/i1/noah.asp.
 - 6 For deeper study on this, please see Nozomi Osanai, "A Comparison of Scientific Reliability, A comparative study of the flood accounts in the Gilgamesh Epic and Genesis," *Answers in Genesis*, AnswersInGenesis.org/go/gilgamesh.
 - 7 See chapter 14 by Dr. Andrew Snelling in *The New Answers Book 1* (Green Forest, AR: Master Books, 2006).
 - 8 For compelling evidence that the earth is not billions of years old, read *The Young Earth* by Dr. John Morris and *Thousands . . . not Billions* by Dr. Don DeYoung; also see AnswersInGenesis.org/go/young.
 - 9 Mt. Everest is more than 5 miles (8 km) high. How, then, could the flood have covered "all the high mountains under the whole heaven"? Before the flood, the mountains were not so high. The mountains today were formed only toward the end of, and after, the flood by collision of the tectonic plates and the associated up-thrusting. In support of this, the layers that form the uppermost parts of Mt. Everest are themselves composed of fossil-bearing, water-deposited layers.
 - 10 A. R. Wallace, *Man's Place in the Universe* (New York: McClure, Phillips & Co, 1903), pp. 225-226; wku.edu/~smithch/wallace/S728-3.htm.

