

Appendix A

THE GEOLOGY OF NOAH'S FLOOD

*"In the last days scoffers will come...they will say...
everything goes on as it has since the beginning of creation"
2 Peter 3:3-4*

(This text is taken from a lecture given on November 29, 1992 by Maurice Hamel at the Presbyterian Church of Coventry in Coventry, Connecticut. It was part of a Sunday School segment entitled "The Reasonableness of Genesis" dealing with the accuracy of the first eleven chapters of the first book of the Bible.)

Chapters 6 through 9 of the Book of Genesis describe a worldwide flood which took place approximately 4400 years ago according to biblical chronologies. For centuries the account of the flood was considered to be true because of its presence in Scripture. But for the past 200 years or so, the rise of modern geologic thought has promoted the idea that this biblical account was simply a fable or myth dealing with a local flood, which was handed down verbally over numerous generations. The worldwide flood of Noah's time was never disproven. It was simply considered to be unreasonable in light of changes in the initial assumptions that were used concerning what the world might have been like in times past. This was done, in part to make room for the concept that the physical processes that we observe today shaping the land around us extend essentially unchanged into the past. This concept of "uniformitarianism" is used to interpret the origin of all rocks on earth, even though no direct observations can be made on the processes at work in past times. Because of this, the geologic record is interpreted to indicate that it has taken millions of years to create the world that we see today.

The theories that will be presented here will attempt to deal with many of the doubts and unanswered questions concerning Noah's Flood in order to show that the proper use of science does in fact indicate that such a flood is reasonable given the geologic record around us today. As much as possible, the topics discussed here will be limited to geology and related sciences.

Questions which commonly arise concerning the Flood include: Could it have been a local flood? How could it have covered all the mountains? Where did all that water come from and where did it go? Why is there no indication of such a flood in the rocks and soil around us?

THE WORLD BEFORE THE FLOOD

In reading the first 5 chapters of the Book of Genesis, several things are noticeable that are different than the world we live in today. People are described as living to over 800 years old. The land is described as being a garden, but there appears to have been no rain. Instead "*streams came up from the earth and watered the whole surface of the ground*" (Gen. 2:6). Do these observations have any basis in science, or was it basically the same world we see around us today being described in simplistic terms?

Modern science still has not determined the cause of physical aging. It is not inconceivable that in the past the conditions that cause us to age might have influenced us more gradually. But realistically, could those conditions have actually existed on earth?

Biomedical research has found that greater than normal atmospheric pressures are very effective at combating disease and promoting the healing of wounds. The acceleration of healing is apparently a result of the greater atmospheric pressure causing more oxygen to enter the tissues. By inference, an increase in the mass of the air column above the earth, increasing the atmospheric pressure, would be a beneficial factor in terms of general health and longevity.

An experimental light bulb has been developed which emits full spectrum light without emitting harmful ultraviolet radiation. It is reported that otherwise common plants grew leaves of greater than normal size when exposed only to those lighting conditions. These conditions would explain why the fossil record shows the plants we typically associate the dinosaur's environment were larger than are common today.

Ultraviolet light also is known to cause damage to the skin in terms of sunburn, premature weathering and skin cancer. Therefore, it is reasonable that a layer of the atmosphere, more effective than the present ozone layer at filtering out ultraviolet light, would be beneficial to health and longevity.

A working theory presently being investigated, which includes these components, is the water vapor canopy. The vapor canopy would have consisted of a layer of water in its gaseous state in the upper atmosphere, not unlike the present ozone layer. This vapor canopy would be fully transparent to visible light, but would absorb the higher energy wave lengths. It would thereby provide a protective shell against some of the radiation which presently penetrates the ozone layer and other portions of the atmosphere. It would also serve as a greenhouse barrier, helping to reduce heat loss, minimizing temperature fluctuations and effectively eliminating the major temperature differences between the equator and the poles. Since it is these temperature differences that drive the wind, the weather of the pre-Flood world would not have had the strong air currents and temperature gradients necessary to form storm fronts. Today the water present in our atmosphere is to a large degree represented by visible water particulates in clouds. Since the canopy was a vapor not a liquid, it would not have inhibited incoming visible sunlight as a cloudy day would do.

The vapor canopy is consistent with the biblical account of the second day of creation which indicated that the sky separated the water on the earth's surface from the water in the upper atmosphere. Gen. 1:6-8 reads, "*Let there be an expanse between the waters ... and separate the water under the expanse from the water above it. And so God called the expanse sky.*"

Note that Gen. 9:13 indicated that the rainbow was sent as a sign of God's promise to never destroy the world again with a worldwide flood. If rainbows had occurred prior the Flood, such a sign would have been of little security to Noah and his family for dealing with the frightening memories they experienced during the rain showers that came in the months after they had left the ark.

A rainbow is formed by sunlight passing through the water particulates in thin clouds or light rain. The light is bent in passing through the water, as through a prism. The different colors of the spectrum are bent in slightly different amounts to cause the separate colors to become visible as narrow bands. If no water particulates as clouds or rain, had been present in the atmosphere, then a rainbow would not have been able to form. Therefore, it would have been something new to Noah after God had sent the rain.

Also note that in Gen. 2:5-6 that "*God had not **sent** rain on the earth ... but streams of water came up from the earth to water the whole surface of the ground*". Then later in Gen. 7:5, God said, "*I will **send** rain on the earth for 40 days and 40 nights*". It is certainly not unreasonable to interpret these verses as saying that it was not until the Flood that rain was actually sent to the earth.

The pre-Flood world with a vapor canopy would have been one controlled by a very different hydrological cycle than we presently know. Today, water which evaporates from the oceans and other water bodies condenses into clouds as it come in contact with cooler upper air. Those clouds precipitate rain and snow onto the ground providing water for plants and animals. Some of that water seeps in the ground and enters streams as groundwater flow. Another portion of precipitation flows directly into the streams as run-off. The stream then flow into rivers and into the ocean to begin the cycle over again with evaporation.

THE WORLD DURING THE FLOOD

Chapters 6 through 9 of the Book of Genesis give the recorded account of the Flood as told by Noah and/or his children. These records were probably later edited by Moses in his compiling of documents into the Book of Genesis. The following are excerpts from those scriptures which pertain to the topics discussed here:

"Now the earth was corrupt in God's sight and was full of violence. God saw how corrupt the earth had become, for all the people on earth had corrupted their ways. So God said to Noah, ... 'I am surely going to destroy both them and the earth. ... I am going to bring floodwaters on the earth to destroy all life under the heavens, every creature that has the breath of life in it. Everything on earth will perish. ... Seven days from now I will send rain on the earth for forty days and forty nights'.

"On that day all the springs of the great deep burst forth, and the floodgates of the heavens were opened. And rain fell on the earth for forty days and forty nights. ... [The flood waters] rose greatly on the earth, and all the high mountains under the entire heavens were covered. The waters rose and covered the mountains to a depth of more than twenty feet. ... Everything on dry land that had the breath of life in its nostrils died. ...

"The waters flooded the earth for a hundred and fifty days. ... The ark came to rest on the mountains of Ararat. The waters continued to recede until the tenth month, and on the first day of the tenth month the tops of the mountains became visible. ... By the twenty-seventh day of the second month the earth was completely dry.

"Then God said to Noah and to his sons with him: ... 'Never again will there be a flood to destroy the earth.' And God said, 'This is a sign of the covenant I am making between me and you ... I have set my rainbow in the clouds'".

Note that the "*springs of the great deep*" as well as the "*floodgates of the heavens*" were opened to cause the Flood. It was not simply a rain storm of long duration. If all the moisture in the atmosphere today fell as rain at one time, it would only be about 4" of rain worldwide. This would not have been able to cover all mountains with more than twenty feet of water.

Had it been just a local flood and not worldwide, then certainly animals and people could have migrated out of that area into safe lands. The Scriptures would be in error in saying that every creature with the breath of life in it outside the ark perished. God would not have described such a local flood to Noah as destroying the earth (Gen. 6:12 & 9:11). Most important of all, God would have been a liar in promising that he would never allow such a flood to happen again, since there have been many major local floods since that time.

The rain, which came down from the floodgates of the heavens, continued for 40 days. It covered the earth at least 20 feet in depth (Gen. 7:20), which Noah would have known because that was the depth which the ark extended below the water surface. Once the rain stopped, the water began to recede. It was another 6 months before the tops of the mountains became visible. Then 4 months passed before Noah let out the dove which found an olive leaf, indicating that roots remaining in the flood sediments were starting to grow once again. After this, it was 2 months more before God indicated that it was time to come out of the ark. They had been in the ark for a total of 1 year and 10 days.

In the year that they spent in the ark, the world had been subject to many extraordinary natural forces beneath the water's surface. The subterranean pressurized "*springs of the great deep*" flowed out onto the surface of the earth as faults opened up. This could be envisioned as the surface of the earth cracking open, as in the grade "B" movies of the 1950's. As these caverns of water were emptied, magma from beneath the earth's crust would have flowed upward to fill the voids now created. Over time, these volcanics would have also flowed out onto the surface of the ground beneath the surging waters.

As in any storm, strong currents caused by the flood water would have caused widespread erosion and the deposition of these eroded sediments into low lying areas. Fish, plants and animals would be swept up with these rushing currents and buried in great numbers in the quickly thickening deposits all over the world, exactly as the fossil record shows.

These plants and creatures became fossilized, because they were buried too quickly to have decayed. If you picture a dog burying a bone, that bone would not become a fossil. The bacterial and insect life in the soil and other scavenging animals would use it as food. A month or a year later there would be no sign of his bone. But if the bone was buried hundreds of feet down, under the right conditions of temperature and groundwater mineralization, the bone could become fossilized or petrified. Over time, its elements would dissolve and be replaced by other elements from the groundwater.

In certain areas, flood waters would have concentrated plant matter from the lush forests of the pre-Flood world into buried layers. With the geothermal heat provided by the volcanic activity, these widespread plant layers would "cook" into coal and oil deposits. Some of the components of petroleum can be formed within a few days in a laboratory by heating plant extracts, such as chlorophyll under the right conditions. Further research is ongoing to determine the conditions and time spans which would have been necessary to create the fossil fuels we are utilizing today.

Similarly, concentrated solutions of mineralized waters from deep under the earth and from sea water, in combination with the heat from the regional volcanic activity, would provide ideal conditions for promoting the cementing of loose sediments into sedimentary rocks such as sandstones.

The cooling of these mineralized waters would have caused large quantities of dissolved minerals to come out of solution forming fine particles. These particles would settle to the bottom of the floodwaters as they calmed. This would be consistent with the thick layers of limestone, salt and gypsum scattered throughout the world.

All of these sedimentary rock formations are inter-layered throughout the world with volcanic layers. Worldwide, many of these volcanics are known to have been deposited underwater. All of which is consistent with our model of rapid worldwide changes happening beneath the floodwaters.

The additional weight of water and sediment pressed on the land's surface. Also, there was a loss of pressure beneath the surface by the outpouring of first water then magma. Because of this there would have been a shifting of the earth's crust to reestablish the balance of weight over the molten mantle. This shifting would have caused the liquids within the mantle to also become more turbulent, causing continental drift and the migration of the magnetic poles. The force of the shifting continental plates built mountain ranges as they were pushed against each other to cause buckling and folding, much like a carpet getting pushed behind a door. These recently solidified sediments would be thrust upward thousands of feet in elevation, resulting in ocean bottom fossils being present in the rocks of the high Alps and Himalayas.

As vast areas of land were being uplifted, great volumes of water were draining off the surface of the land into our present oceans. In places the force of the draining floodwaters scoured deep canyons through the recently solidified rock. This would account for the large scale of erosional features like the Grand Canyon.

A similar feature covers much of southeastern Washington state. Geologists acknowledge that the network of canyons called the Channeled Scabland was formed by the sudden draining of a massive body of water through a narrow passage. In the same way, a one fortieth scale version of the Grand Canyon was formed in 1982 in the aftermath of the 1980 eruption of Mount Saint Helens. In the month following the eruption, up to 600 feet of finely layer sediments were deposited. Less than two years later, a one day mud flow cut a canyon 140 feet deep through these sediments.

Typically, it is assumed that fine layering such as this are the result of annual cycles, and so such a rock formation would be assumed to form over tens of thousands of years. Then additional hundreds of years for a small river to erode a canyon through the sediments. In light of the observations made at Mount Saint Helens, it is certainly not unreasonable that a larger volume of water over a short period of time could have carved the Grand Canyon in the draining of waters after Noah's Flood.

Using the geologic processes at work in the observable world today, these events would have taken "geologic time" to occur. In light of the cataclysmic changes which would have accompanied the Flood, these events could have occurred over the period of months that Noah and his family spent in the ark.

The fossils found in the rock formations of the geologic column are considered by evolutionists to be a record of biological change over time. Rock formations deepest in the geologic column have no fossils. These are overlain by units with deep sea fossils, primarily shell fish such as trilobites. Higher in the column are various types of fish, described as being the next stage of evolutionary progress. This is overlain by units with swamp vegetation, insects and lizards (dinosaurs). The top of this idealized geologic column contains fossils of hardwood and softwood trees, along with mammals.

This stratigraphy is supposedly proof of the developmental change of evolving species over the hundreds of millions of years which it took to deposit the sedimentary rocks containing the fossils. It has already been shown, in the case of Mount Saint Helens, that large thicknesses of sedimentary rocks can be formed in a short period of time. A scenario for creating sedimentary rocks on a global scale during a worldwide flood with vast volumes of water causing large scale erosion and deposition has also been discussed.

If instead of representing geologic ages, the fossil distribution represented ecological communities at different elevations, a similar distribution of fossil types would be expected. The lowest elevations would be in the ocean as characterized by bottom dwelling shellfish. The shallow continental shelf habitat would be represented by a concentration of fish and other shallow water life forms. Coastal areas would be dominated by wetlands and the plants and animals found there. Higher elevations of the land would be inhabited by mammals.

This topographic distribution is essentially the same as the sequence of development proposed by the theory of evolution. The ecosystem found at the lowest elevation would have generally been the first to have been covered over by widespread sedimentation and so would have the appearance of being older than subsequent units in the geologic column. As each subsequent ecosystem was covered over in a period of days or weeks the sequence interpreted as requiring "geologic time" to occur could have been formed.

AFTER THE FLOOD

The world that Noah, his family and the animals found as they left the ark, was one very different than they had known the year before. The protective greenhouse affect of the vapor canopy was gone. Where once temperatures were consistently mild because of its moderating influence, now temperature swings could happen much more easily. Rather than having the sun's warmth being distributed evenly beneath the greenhouse of the vapor layer. The new climate of the world allowed solar heating of the earth in a more localized manner.

Temperature differences between parts of the globe resulted in the weather patterns which are so familiar to us today. The jet stream moving high and low pressure systems is driven by these worldwide temperature differences which probably did not exist before the Flood.

As the earth readjusted to its new geologic conditions, there would have been continuing volcanic activity and a steady supply of volcanic ash being forced into the upper atmosphere. This would cause temporary reductions of sunlight and less heating of the land surface. At the same time the oceans would have still been warm from the pre-Flood world and the heat of the Flood activities. These warm oceans could provide large amounts of moisture to the atmosphere, which would result in precipitation as the new air circulation patterns moved the moisture over the cold land masses.

In the colder latitudes, such as New England and Canada, precipitation would have fallen as snow. The warm oceans would have provided an ongoing source of water feeding storm fronts, much as the Caribbean does today for summer hurricanes. But in the world immediately after the Flood the ocean would have been warm even in the North Atlantic. Therefore, the snows would fall heavily and frequently and the summers were not warm enough to melt off the heavy snow cover.

The Ice Age could be attributed to these conditions which would have lasted until the oceans cooled and volcanic activity became less frequent allowing the haze to dissipate. Ash layers in the Greenland ice sheet confirm that volcanic activity was common during the Ice Age.

Computer weather models incorporating the concepts of the warm polar oceans and volcanic haze estimate that the Ice Age might have lasted 200 to 1700 years, with a best technical estimate of about 500 years. Assuming that Noah's Flood occurred approximately 4400 years ago, 2400 B.C., as indicated by biblical chronologies, then the Ice Age might have spanned roughly 2400 to 1900 B.C. Under those time frames, the glaciation of North America would have been occurring in the northern latitudes, while in temperate climates the post-Flood descendants of Noah were building the Great Pyramids in Egypt and forming the Sumerian culture in Mesopotamia including the city of Ur. Toward the end of these years would have been the calling of Abraham and Joseph's journey to Egypt.

It is worth noting that none of the other current theories for the cause of the Ice Age are able to provide adequate snowfall to create and maintain the glacial ice using existing weather models.

The population of both man and animal increased geometrically with each generation after the Flood and so spread across the earth. But a question remains, how could the unique biology have formed in lands isolated from the Middle East by oceans, if not by evolution?

During this period after the Flood, when large volumes of water were present in glaciers, sea level was significantly lower than it is today. Land masses that today are separated by oceans would have been connected by land bridges across Indonesia to Australia, the Bering Strait between Siberia and Alaska, and the English Channel between France and Britain for example. If we consider the fact that the in the 1980's a rabies epidemic migrated over 300 miles from Virginia to Connecticut in about a decade, it is certainly reasonable to think that animals the size of mice or raccoons, moving into unpopulated territories, could have traveled the 7000 miles from the Middle East to Australia or Alaska in the 500 year time span that the land bridges would have existed. Once isolated from the Eurasian continent, local climate and competition for food would have caused specific physical traits to prosper in each locality. Regional or worldwide extinctions would occur as different kinds of animals were unable to adapt to their new environment or to co-exist with man.

Much more scientific research needs to be done to confirm the accuracy of the various points of the model being presented here. There is something in the range of one person doing scientific research using the premise of a recent creation as part of their thought process for every thousand people researching from the starting point of the Big Bang and evolution. As shown here, the starting point of a theory can cause the interpretation of the same facts to come out vastly differently.

This text presents only one scenario which can account for the appearance of the physical world around us from the view point of the accuracy of the Scriptures. An important issue to consider is whether models based of the biblical record present a reasonable interpretation of the facts. Another point to consider is whether modern science's claim to have the only valid interpretation of the truth is reasonable in light of its bias against the existence of an intelligent force having created and controlling the universe. The corollary to science's bias is modern culture's disdain for the idea that this intelligent force, God, might have communicated to us.

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Appendix E

<http://healingtheland.org>

Healing The Land (Exposing Our Environmental Misconceptions) is the non-denominational writing ministry of Maurice Hamel, an environmental geologist, Creationist and evangelical Christian. It includes the on-line book *Nature God's Groaning Creation*, along with articles, commentaries and perspectives generally derived from that book. All these are provided at no cost.

The goal of this web page is to offer a unique biblical perspective on our stewardship responsibility for God's creation and our relationship to God our Creator. It does this through a presentation of a world view based on a recent creation and a confidence that God (Father, Jesus Christ and Holy Spirit) continues to be actively involved with his creation.

Even though our continuing efforts to overcome our environmental problems leave many frustrated and concerned, this world view provides those who are environmentally concerned with reason to be encouraged about the present and future state of our natural world. It also provides a real opportunity for individuals to have a positive effect on the health of our environment.

Maurice and his wife live on a small farm in southern New England.

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TAKE A QUIZ ON MISCONCEPTIONS ABOUT NATURE

How can we protect our environment if we don't properly understand it?

Test what misconceptions have you accepted about God's creation by answering these True or False questions:

- 1. The balance of nature shows the harmony of the original creation.**
- 2. The food chain is one of the basic building blocks of God's creation.**
- 3. Our environmental problems are primarily due to the fact that people are no longer are behaving like a part of nature.**
- 4. To preserve the last remnants of the garden God created, we should work to protect wilderness areas.**
- 5. Each religious tradition is valuable for the wisdom it contributes to enable us to heal the land.**
- 6. Through education, programs to help the poor, and laws to prevent the misuse of the environment, we can help to save the planet.**

(See next page for answers and references.)

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ANSWERS TO QUIZ

Each of these statements are false. If you thought they were true, your perspective of nature, its creator and your role as its steward should be reevaluated.

1. **False** - Nature is what the good creation looks like after suffering under the curse for 6000 years. Nature is not progressing through evolution, it has been deteriorating from its original orderliness. We see fertile land becoming dry and unproductive, diseases being created through viral mutations and diversity being reduced due to extinctions, not all of which are caused by man. (*See Chapter 8*)
2. **False** - The food chain is based on the strong eating the weak for survival. Even though this is the way the world is today, we need not assume that this was the way that it was prior to the Fall and its curse. In the beginning, God gave every creature the green plants as their food, not each other. (Genesis 1:30) It misrepresents the character of God to suggest that he was only able to provide for his creatures by having them stalk and kill one another. Suffering and death were not introduced into the world until Adam sinned. (*See Chapter 9*)
3. **False** - The Bible teaches that man is the caretaker of the creation, not simply a part of it. Our relationship to the creation is presented as tenants in God's vineyard. Both Peter & Jude warn us against those who would have us think like just another one of the animals. (2 Peter 2:12 & Jude 10, 19) (*See Chapter 15*)
4. **False** - Due to changes that were brought on by the Fall and its Curse, the conditions that were present in the Garden no longer exist on earth. While it is important to not waste what God has given us, the "undisturbed" wilderness where creatures dwell in the absence of man are not lush peaceful islands of Eden for God's creatures. (*See Chapter 9*)
5. **False** - The Bible teaches that God's instructions concerning the steps necessary to "heal the land" in 1 Chronicles 7:14 can only be put to use by those God recognizes as his own, "my people, who are called by my name." Therefore, if you are truly concerned about the environment and want to do something to help, the first thing that you need to do is to get right with the God of the Bible. Only then will you have the right to ask God to heal our land, as he promised. (*See Chapter 17*)
6. **False** - It is presumptuous to think that we can save anything under our own power. Education and laws will not change man's sinful nature, and no amount of charity will prevent us from having the poor among us. (John 12:8) These are all ideas that our culture promotes to make use of the inherent "goodness" they believe is in man's heart. We can slow the rate we are degrading the earth, but it is Christ revealing the "children of God" that the creation eagerly awaits. (Romans 8:21) (*See Chapter 7*)

