Dr. Walt Brown's Discoveries of how the breaching of Grand Lake (discovered by Brown) formed the Grand Canyon. Published for the first time in his 5th Edition – 1989. This publishing followed several months of radio interviews and lectures which presented and explained the same information.

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(High-altitude, U.S. Air Force photograph of the Grand Canyon)

Have you ever wondered how the Grand Canyon formed? After examining much broader issues in the following pages, a surprisingly simple explanation will be given.

As newly formed mountains slowly sank over the decades, the Moho immediately beneath them was depressed to depths of as much as 20-30 miles (30-50 km). (See Figure 14.) The Moho and mantle were depressed to a lesser extent as an undeformed hydroplate settled on the floor of the chamber. The more sediments it carried, the deeper it sank. Those regions of the chamber floor which no longer carried a load rose several miles to become our ocean basins. This is why continental material is so different from oceanic material, and why the Moho is so deep beneath mountains and yet so shallow beneath the ocean floor.

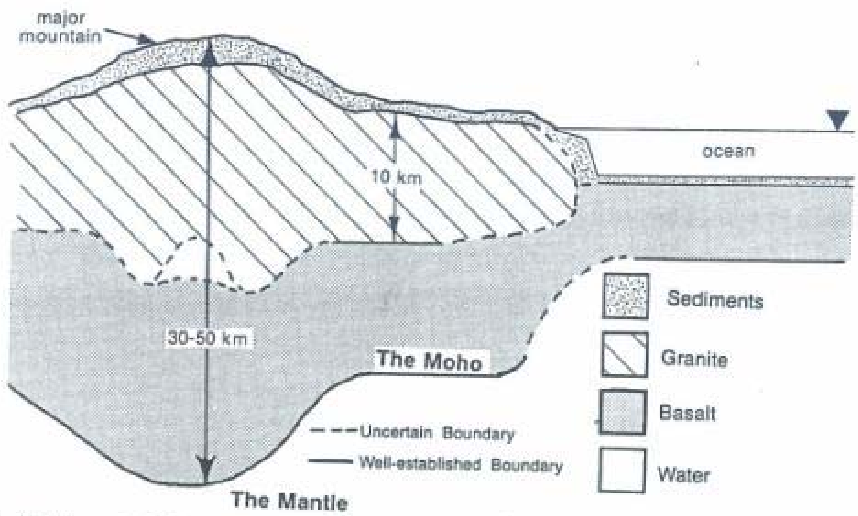


Figure 14: This is a typical cross section of the continents and oceans as they appear today. Notice the relative depths of the Moho (the Mohorovicic discontinuity). It is deepest under the major mountains and shallowest under the ocean floor. Although geophysicists are uncertain of the exact location of some boundaries, most of these general characteristics are well-established. Notice also that a large pocket of water may be under major mountains.[24]

When this buckling began, the mountains rose very rapidly.[25] As the earth's topography became more irregular, the flood waters drained off the more elevated regions. Also, the violent force of the upward surging subterranean waters was "choked off" as the plates settled onto the floor of the subterranean chamber. Without the high pressure flow out from under these sinking plates, water could no longer be forced up from these *very deep* basins. Instead, the deep basins became reservoirs into which the flood waters returned. As you will recall; these deep reservoirs were initially part of the floor of the subterranean chamber, several miles below the present ocean bottoms.

The drainage of the waters that covered the earth left every continental basin filled to the brim with water. Some of these postflood lakes lost more water by evaporation and seepage than they gained by rainfall and drainage. Consequently, they shrank over the centuries. A well-known example was former Lake Bonneville which has shrunk to become the Great Salt Lake.

Through rainfall and drainage from higher terrain, other lakes gained more water than they lost and thus overflowed their rims at the lowest point. Just the slight erosion of a rim allowed more water to flow over it. This eroded it even deeper and caused even more water to cut it faster. Thus, the downcutting process accelerated catastrophically. Eventually, the entire lake dumped through a deep slit which we today call a canyon. These waters emptied into the next lower basin, causing them to overflow their rim and create another canyon. It was like falling dominoes. The most famous canyon of all, the Grand Canyon, was caused primarily by the dumping of what we will call Grand Lake, which occupied the southeast quarter of Utah, parts of northeastern Arizona, as well of small parts of Colorado and New Mexico. It stood at an elevation of 5,700 feet above our present sea level. Grand Lake spilled over and quickly eroded its natural dam 22 miles southwest of what is now Page, Arizona. In doing so, the western boundary of former Hopi Lake (elevation 5,950 feet) was eroded, releasing the waters that occupied the present valley of the Little Colorado River.

In just a few days, more water was released over northern Arizona than is in all the Great Lakes combined.[26]

Shifts of mass upon the earth created stresses and ruptures in and just beneath the earth's crust. This was especially severe in the region that is now the Pacific Ocean, since the major continental plates all moved toward the Pacific. The portion of the plates that buckled downward were thrust (or subducted) into the earth's mantle. This subduction, along the borders of the Pacific Ocean, produced the ocean trenches and the region called the "ring of fire." The sharp increase in pressure under the floor of the Pacific caused ruptures and an outpouring of lava which formed submarine volcanoes called seamounts. This was the beginning of a period of violent volcanic activity on a global scale.

The subducted rock was pushed down into a higher temperature and pressure region of the earth. Some of the minerals that compose a large fraction of this rock undergo a type of phase transformation; that is, their atoms rearrange themselves into a denser "packing" when the temperature and pressure rise above certain thresholds. Olivine, for example, snaps into a configuration called spinel having about 10% less volume. The collapse begins at a microscopic point and creates a shock wave. A larger pocket of rock, that is already sufficiently heated, then exceeds its pressure threshold. The resulting implosion is called an earthquake. Over the many centuries since this worldwide cataclysm, the subducted rock has slowly heated up, and it periodically implodes. The reverse process, that of sudden expansion, occurs at the Mid-Oceanic Ridge. There, some minerals want to swell and rearrange themselves into a less dense packing. The swelling at the ridge and the shrinking at the trenches cause the skin of the earth to slide in jerks along its "near-zero-shear-strength surface" 125 miles (200 km) below the earth's surface. Earthquakes also occur under hydroplates wherever there has been a large vertical displacement.

The heat from the chamber floor continued to pass into the oceans but at a reduced rate due to the insulating blanket of sediments laid down during the flood phase. For many years, the warm oceans and the resulting high evaporation rates produced heavy rains. Heavy clouds and volcanic debris shielded the earth's surface from much of the sun's rays, producing the ultimate "nuclear winter." At the higher latitudes and elevations, such as the newly elevated and extremely high mountains, this combination of high precipitation and low temperatures produced very heavy snow falls—perhaps 100 times that of today. The large temperature differences between the cold land and warm oceans generated high winds which rapidly transported the moist air to regions where heavy snowfall would occur—especially over glaciated areas. As snow depths increased, periodic and rapid movements of the glaciers occurred in "avalanche fashion." During the spring and summer months, rain fell instead of snow, causing the glaciers to partially melt and retreat, thus marking the end of that year's "ice age."

Sea level remained substantially below today's level for some time. This is because the ocean floor began its rise from a depth of over 6 miles (11 km). During the summer months, the cold, swollen, turbid rivers cut deeply into the soft, freshly deposited sediments along the steep continental slopes. This erosion occurred down to the sea level of that day, thousands of feet below our present sea level. Thus were formed the hundreds of submarine canyons which are often extensions of our present rivers. Many seamounts grew up to the surface of the lowered ocean, where their peaks were eroded and flattened by wave action. These flat-topped or truncated cones are now call **guyots**, and their eroded tops are also several thousand feet below today's sea level. Sea level continued to rise as the glaciers melted and retreated to their positions of today. This glacial retreat continues.

CONCLUSION

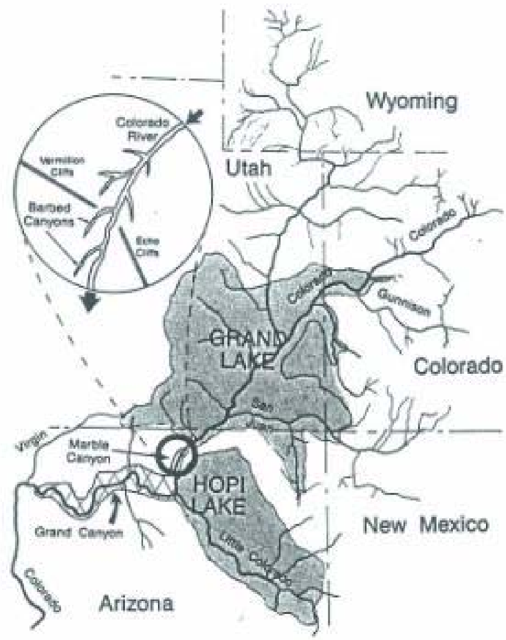
The scientific ramifications of this working hypothesis are much broader than that described here and in the footnotes. Each of the seventeen features has various other aspects that contradict the many explanations that have been proposed for that feature over the years. Hydroplate theory seems to explain them all.

from beneath the entire length of the Appalachians, voids will be created. The Appalachians would collapse in many stages. The densely populated eastern United States would experience earthquakes such as the earth has not experienced in modern times. Similar dangers exist for other deep-drilling projects that West Germany and the Soviet Union are planning into mountainous regions.

Most portions of the continental plates did not buckle or shear during the compression event. As these flat plates settled onto the chamber floor, they sometimes trapped thin patches of water. Such a patch may have been recently encountered in the Soviet Union, on the Kola peninsula near the Arctic Circle. Soviet engineers, undertaking the most ambitious drilling project ever, have reported encountering "strongly mineralized waters" flowing or "circulating" (not percolating or seeping) at a depth of 11.5 kilometers or 7.1 miles.* Water at this depth is especially surprising since surface water should not be able to seep below rock depths of 6 or 7 kilometers. At that depth the lithostatic pressure is so great that any pore space in rock should be pinched shut. Of course, if water originated below that level, this result would not be suprising.

25. When a long, thin object, such as a yardstick, is steadily compressed, there is no bending or displacement until the compressive force reaches a certain critical amount. When this force is exceeded, the yardstick or any compressed beam or plate "snaps" into a bowed position—or more accurately into the shape of one-half of a sine wave. As further compression occurs, the amplitude of the sine wave increases. Therefore, mountains rose with extreme speed and violence. This applies to all theories of mountain formation, not just the hydroplate theory.

26. Marble Canyon was eroded by the waters of Grand Lake, while the Grand Canyon was eroded by the waters of both Grand and Hopi Lakes. The boundaries of both Hopi and Grand Lakes have been recently identified by a number of their geological and topological features. Hopi Lake has been reported on previously.** The catastrophic dumping of Grand Lake took place through what is now the gap between Echo Cliffs and Vermillion Cliffs. Before the rapid erosion of this natural dam, those two cliffs were a single face of a block faulted mountain. The release of these vast waters first eroded hundreds of meters of relatively soft Mesozoic sediments off of northern Arizona. Once completed, the downcutting through the relatively hard Kaibab limestone began. As it proceeded, more water, with increasing hydrodynamic head, was released from the water saturated sediments flanking the canyon. Subsurface flow, mass wasting, and slumping were extreme. The weight of material removed from northern Arizona produced isostatic uplifts that account for the "Barbed" Canyons,*** the Kaibab Plateau, much faulting, and some volcanism. The timing of this event is uncertain. Perhaps it took place a century or two after the flood.



*Kerr, Richard A., "The Deepest Hole in the World," *Science*, Vol. 224, 29 June 1984, p. 1420.

**R.B. Scarborough, *Cenozoic Erosion and Sedimentation in Arizona*, Arizona Bureau of Geology and Mineral Technology, 16 November 1984.

***In most cases, side streams enter their main streams at acute angles. However, the drainage through the "barbed" canyons enter the Colorado River at obtuse angles. These canyons are called "barbed" because on a map their backward orientation gives them the appearance of barbed wire. Except for an occasional cloudburst directly overhead, there is essentially no drainage through these giant canyons. So what cut them, and why are they backwards? The answer lies in the northward dip of the land shortly after the vast weight of sediments were suddenly removed to the south by the dumping of Grand and Hopi Lakes. The drainage pattern was reversed for the surface drainage and the waters spilling out of Echo and Vermillion Cliffs and elsewhere.