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## Archaeology: Quest for the Nephites

In the nineteenth century, what developed into the school of Higher Criticism undertook to find and apply rational and scientific methods for the study of history, and perhaps especially of the Bible, with seminal works by Julius Wellhausen, Friedrich Schleiermacher, David Friedrich Strauss, Ludwig Feuerbach, Ernest Renan and Rudolf Bultmann. By the end of the twentieth century a number of scholars in Mormon studies had done some similar work, which has laid the foundation for a Higher Criticism of the *Book of Mormon*.

Initially, critics of the *Book of Mormon* were virtually all self-declared foes of this new bible. Their work was built on faded memory, hearsay, rumor and at times deliberate calumny. A century later, pre-Columbian archaeology began providing a scientific basis for a school of Higher Criticism to address BoM issues. Some major civilizations sometimes cover only a few centuries. Classical Greece lasted about three. The Mormon bible asserted that for a millennium after 600 BCE pre-Columbian America had been occupied exclusively by what eventually became millions of Israelites, and gave extensive details of the material culture, geography, cities and villages. We should expect to find scientifically dated remains of items mentioned in the BoM, including fortifications, cities, tools, furnishings, clothing, weapons, and the crops and animals used for food, wool and work.

### The Archaeological BoM Item List

To systematize this inquiry in an efficient manner, the following table has been prepared listing items mentioned in the BoM narrative, with indications of what has and has not been found.

**Table 2.** Archaeology and the *Book of Mormon* Item List

Item in the BoM	Found in Pre-Columbian Archaeological Sites?
Hebrew Texts	none, in either book or inscriptional format
reformed Egyptian Texts	none, in either book or inscriptional format
City walls	yes, but associated with other cultures only
High places, temples	yes, but associated with known Mayan, Olmec, Caral (etc.) cultures
Iron works	no smelted iron has been dated to this time frame (cold hammered iron objects have been found in the Pacific Northwest)
Steel works	no evidence of steel smelting in this time frame

Brass	no evidence of brass in the New World, but bronze existed in South America
Copper	yes, especially in South America (including smelting)
Gold	yes, but it spread rather late into Mesoamerica
Silver	yes, but it spread rather late into Mesoamerica
Tumbaga	yes, but it spread rather late into Mesoamerica
Ziff	none (See discussion below)
Chains	none, with the possible exception of gold jewelry
Swords of metal, esp. steel	None
Breastplates of metal	none found
Bucklers	depends on definition
Cement houses	none (only adobe, of late production, and plaster)
Plowshares	None
Wheeled vehicles	none (toys, but no vehicles, there being no draft animals)
Chariots	None
Roads	paved roads for processions and to enable teams of men to carry heavy tax/tribute bundles through rainforests and similar terrain
Machinery	See below
Gold & silver coins	No coinage has been found in the New World. (Note: The BoM does not use the word "coin" but "pieces" of silver & gold, each with a different name, which it refers to as "money." The chapter heading used to say "Nephite coins and measures," up to the 1960's, but now says "Nephite coinage")
Horses	none found by the Europeans, and no bones have been found of horses dated to within the last 7,000 years
Cattle, bull, calf, ox	no cattle found by the Europeans, nor any bones of cattle
Sheep	no sheep found by the Europeans, nor any bones of sheep
Goats	no goats found by the Europeans, nor any bones of goats (apart from mountain goats)
Ass	not found
Swine	not found
Flocks, herds	none for any of the above animals
Elephants (Jaredites)	not found (or even mammoths, in the last 7,000 years, nor bones in this period)
Barley	none found, nor barley pollen
Wheat	none found, nor wheat pollen
Corn (maize)	Found
Grapes	no <i>vitis vinifera</i> (wine grapes), but other species did exist
Winepress	none
Figs	None
Silk	None

Linen	None
Crucifixion cataclysm	see discussion below
Israelite DNA	not found (see discussion below)

Ziff is found in Mosiah 11:3 in a list of metals, which are, in the order found in the text: gold, silver, ziff, copper, brass and iron. The use of a Nephite word should indicate that it is a material for which there was no equivalent in the English language of the 1820's. There is no evidence of a metal in pre-Columbian America that was unknown to English speakers when the *Book of Mormon* was being prepared.

There is no way to know what is meant by "machinery" in Jarom 1:8. Noah Webster, in 1828, defined it as:

A complicated work, or combination of mechanical powers in a work, designed to increase, regulate or apply motion and force as the machinery of a watch or other chronometer.<sup>1</sup>

In this context, one can suggest that minimally it refers to laborsaving and/or task-enabling devices with at least one moving part, based on the principle of the lever, and/or the wheel. Examples of early machinery include the water-driven mill, ox-driven or man-driven mills, weight lifting devices, including the lever (beam on a fulcrum), simple cranes and pulleys, water lifting devices (the simple *shādūf*, in the Middle East by 1500 BCE, and the larger and more complex noria water wheel, developed in Egypt possibly 300 BCE) and simple cog-wheels (using pegs as cogs). The reference is important because it implies an advanced agricultural economy that benefits from devices developed by urban-based artisan specialists, such as one might possibly expect to some degree of the Maya or Olmec civilizations. In any case, if they were in use anywhere, these are items that should have left discoverable remains.

It is clear from this list that nineteenth-century authors replicated their New England farm and town life in the *Book of Mormon*, with an item list that is largely just not found in the pre-Columbian New World.

### **Pre-Columbian DNA**

The result here is quite definitive. It has been best presented in the Mormon context by Simon G. Southerton, an accomplished research

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<sup>1</sup> Noah Webster, *An American Dictionary of the English Language* (New Haven: S. Converse, 1828).

scientist, and former Mormon, who served two years as an LDS missionary, and two years as a bishop. His study discusses the scientific findings in detail. His conclusions are succinctly stated as follows:

The ancestors of Native Americans were Asians who unknowingly became the first Americans as they walked across Beringia over 14,000 years ago. The ancestors of the Polynesians were Asians who honed their considerable nautical skills among the islands of Southeast Asia before sailing out into the Pacific during the last 3,000 years. Regardless of coincidental cultural, linguistic or morphological parallels with the Old World, the peoples of the Pacific Rim who met Columbus and Cook were not Israelites. They were descendants of a far more ancient branch of the human family tree that had existed thousands of years before the Israelite branch sprouted into existence.<sup>2</sup>

It is worth noting here, too, that the languages of the pre-Columbian peoples are in no way similar to the Semitic family or to Egyptian. The Polynesian language group has been identified as being most closely linked to the pre-Chinese people of Taiwan, as well as their DNA.

### **Grain & Climate**

According to the BoM narrative, Lehi's party landed on the west coast of South America. The military and missionary campaigns in and to the Land of Nephi (ultimately occupied mostly by the Lamanites) indicate that it was not far from the Nephites in Central America (see Chapter 3). This would place the landing most probably in Columbia or Ecuador. This is as tropical as it gets. Furthermore, the land rises abruptly from the sea to the heights of the Andes mountain chain. The elevation of Quito, capital of Ecuador, is 9,350 feet, the highest capital in the world. Yet it is only about 125 miles from the sea, and lies almost exactly on the equator. Medellin, Columbia, is lower, only 5,000 feet, and also about 125 miles from the sea. Further to the south, Pasto, Columbia, is 8,299 feet above the sea. The rise is so abrupt and rugged that going very far inland would not have been a realistic proposition. These Israelite settlers would have been confined to a relatively narrow equatorial coastal plain (v. Map 1).

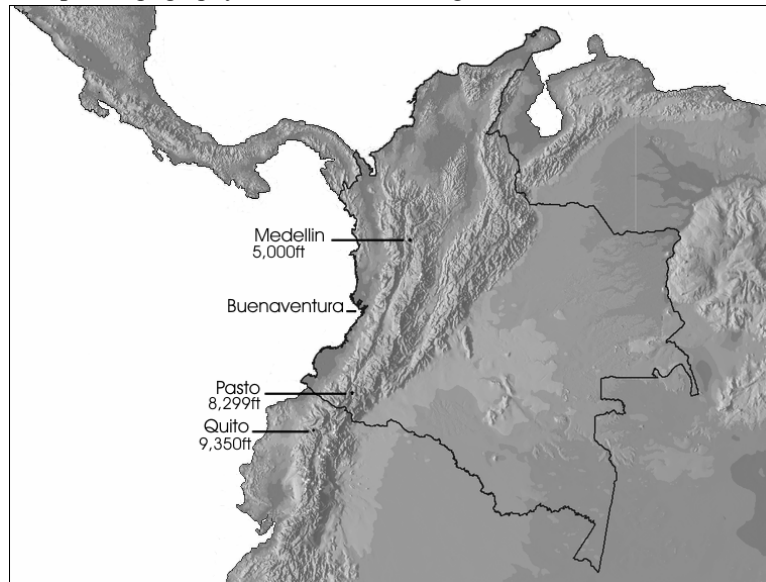
When strife among them produced a split, Nephi's flight with his followers, a group of families, with their possessions, planting seed and

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<sup>2</sup> Simon G. Southerton, *Losing a Lost Tribe. Native Americans, DNA and the Mormon Church* (Salt Lake City: Signature Books, 2004), 130.

flocks, can only have been up the coastal plain, to the lowlands south or southeast of the Isthmus of Panama. An idea of the totally tropical climate on the west coast can be had by noting that of Buenaventura, Columbia, which has an average high temperature in the nineties, 247 inches of rain annually and average humidity in the mid to high eighties. What a change for a band of Jerusalemites.

**Map 1.** Topography of Columbia & Neighbors



Based on a copyright-free map from Wikimedia Commons

Wheat is a temperate climate crop, and prefers moderate rainfall. One wonders if the Middle Eastern grains would have survived at all; certainly their yield and quality would have been miserable.

### **Grain Detection in Archaeology**

This is a hypothetical discussion. There is no evidence that wheat or barley ever were cultivated in pre-Columbian America. Every modern excavation takes systematic soil samples for laboratory examination. A good example is the excavations at Shanidar Cave in northern Iraq, dating 35,000 to 60,000 years ago. There, Ralph and Rose Solecki discovered a burial, next to the Neanderthal cave that they excavated. They took routine soil samples to be analyzed and were informed that

the layer of earth associated with the skeletal remains bore a very large concentration of pollen from flowering plants. The conclusion was that these Neanderthals had sufficiently developed feelings for their dearly departed and burial traditions that they had gathered a large number of flowers to throw in on top of the body before covering it with earth. For us, this is a good illustration of the extreme durability of pollen. Wheat and barley culture, during a millennium of Nephite-Lamanite occupation of large parts of the Americas must have produced settlement areas with soil saturated with wheat and barley pollen.

Another way of knowing what plants ancient peoples exploited, either as cultivars, or wild plants, comes to us from the excavation at Sandy Hill, Mashantucket, Connecticut. There, archaeologists analyzed stone tools for traces of starchy grains, dated to the ninth millennium BP (before present). They found some, including *Cyperus esculentus* (a sedge) that is suitable as a food source. Indications are that one of the tools was used to process it. Due to the damp ecology, of the 23,000+ bone fragments collected, only white tailed deer could be identified with confidence.<sup>3</sup> Modern archaeology has come to closely resemble CSI forensics. Just as CSI might use sophisticated technology to analyze traces of blood, or explosive residue, archaeology uses similar and equally high-tech methods to analyze trace evidence on ancient tools. This technology would also detect other cultivars in addition to grain.

### **Horses, Chariots and Roads**

These three are interlinked, although there is no skeletal evidence of horses in Pre-Columbian America since they had gone extinct in the Americas. When they were reintroduced by the Spanish, they began to spread from tribe to tribe. By collecting the oral history on this subject from the tribes, Francis Haines has traced their dispersion in North America from what emerged as the point of introduction.<sup>4</sup> The modern horse had evolved from the *hyracotherium* (by between 45 to 55 million

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<sup>3</sup> Thomas C. Hart & Timothy H. Ives, "Preliminary Starch Grain Evidence of Ancient Stone Tool Use at the Early Archaic (9,000 B.P.) Site of Sandy Hill, Mashantucket, Connecticut," in *Ethnobiology Letters* (<http://www.ethnobiology.org/publications/ethnobiology-letters>, Vol. 4:87-95, accessed 02 Sept 2013).

<sup>4</sup> Francis Haines, "Where Did the Plains Indians Get their Horses?" *American Anthropologist*, new series, 1938, 40:112-137.

years ago), to the *mesohippus* (by 32 to 37 million years ago), to the modern horse by c. five million years ago, all in the New World. For reasons poorly understood, the modern horse became extinct in the Americas by 10,000 to 7,000 years ago. Wild horses are of two types, the feral horse, once domesticated but later ranging free, such as the mustang (originally brought by the Spanish), and two species of the true wild horse, Przewalski's horse (or Mongolian horse) in Asia, and the tarpan (European wild horse, found in Europe and much of Asia up to c. 1900). Some LDS scholars have suggested that in a pocket or two in the Americas, the modern horse may have survived extinction at least into the BoM Nephite period. To bring this theoretical hypothesis into the realm of empirical reality, one must find and date skeletal remains.

### **Roads and Wheeled Vehicles**

The absence of draft animals in Pre-Columbian America has implications for the probability of chariots. Although a model of a crude wheeled vehicle has been found, this is thought to have been a child's toy, showing that the concept of the wheel existed. So who knows? Even without draft animals, was a king ever moved about with a sort of rickshaw? Not impossible, but more pertinent would be to find remains of a chariot. Such remains have been found in the Old World. In the Champagne district of France an ancient chariot has been found in a tomb. A 4,000 year-old burial in Georgia (Eastern Europe) has preserved chariot remains. In Bulgaria, a Thracian chariot and two horses were buried, apparently upright. The remains of a beautifully decorated Thracian chariot were also found near a tumulus (burial) in Serbia.<sup>5</sup> In England, a 2,500 year-old chariot has been found with wheels, their iron rims intact.<sup>6</sup> Also in England, Iron-Age ornate bronze remains of chariot fittings, and what possibly could be equestrian tools have been found at the fort at Burrough Hill.<sup>7</sup> In China, a Zhou dynasty burial yielded several intact wooden chariots with the complete skeletal remains of four horses, dated as early as 700 BCE, showing how wood can survive

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<sup>5</sup> April Holloway, "4,000-year-old Thracian Chariot Unearthed in Serbia," (<http://www.ancient-origins.net>, accessed 8/12/2013).

<sup>6</sup> *Deseret News*, 4/12/2003.

<sup>7</sup> "Stunning Discovery of Ancient Chariot Parts, Equestrian Tools", <http://www.Horsetalk.co.nz>, accessed 14 Oct, 2014. "Burrough Hill Archaeologists Find Iron Age Chariot Remains", BBC News, accessed 14/10/2014.

if buried.<sup>8</sup> Roman chariots have been found in Greece and Thrace.<sup>9</sup> The archaeological remains of chariots survive.

Finally, it is argued that since the Maya built roads (*sacbeob*, singular *sacbe*), they must have had wheeled vehicles. Indeed, the *sacbe* was a very sophisticated road, often quite narrow, but at times very wide. The majority are intrasite, meaning they were short procession ways connecting buildings inside the city. But others connected cities, and a few were quite long. The Cobá-Yaxuna *sacbe* was 100 kilometers long. In addition to ceremonial functions, these intercity *sacbeob* were used for commerce, bringing in tribute on the backs of slaves and possibly even for moving troops. The *sacbe* was often an elevated road, in places elevated to as much as one, or even up to three meters. They were essential for human foot travel through rugged land, especially land that is overgrown with forest and dense brush. In swampy areas, the elevated *sacbeob* kept the marchers above the flood level. Ancient Roman roads have deep ruts from the passage of wheeled vehicles. No evidence of this nature is associated with the *sacbeob*. Given the great utility of the roads for processions and foot travel, there is no reason to assume that they were used for wheeled vehicles.

## Weapons

Relevant to the above are the remains of swords. Those with blades are found mostly in burials or river beds, since both environments are inimical to oxidation (rusting). Even if fully rusted, a sword that for any reason came to be covered with soil, or river or flood silt, would not disappear. Iron oxide is itself a stable compound, retaining every iron atom that went into the formation of the rust. Such a blade would have a bloated form, but would retain a recognizable blade shape. Together with a hilt, the weapon's identity would be certain.

In 2015, hikers in Norway found a Viking sword dated to c. 750 CE. This is a complete steel blade, rusted, but treatable.<sup>10</sup> Of more than a hundred Viking blades found, only around sixteen are swords, apparently because they were very expensive. At least 166 iron swords were found in La Tène at the northern edge of Lake Neuchatel. It is

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<sup>8</sup> "Trip to the Zhou: Remains of horses and chariots unearthed from tomb dating back to 3,000-year-old Chinese dynasty" (<http://www.dailymail.com>, accessed 2/09/2011).

<sup>9</sup> "Roman chariot burial site found [Greece]," with a subtitle "More Roman carts in Thrace" (<http://www.romanhideout.com>, 15/02/2003).

<sup>10</sup> "1,200-year-old Viking sword discovered by hiker," [cnn.com](http://cnn.com), 22 Oct 2015.



thought that the majority, but not all, of the Celtic swords found in lake beds were votive offerings. Finds have been made in various sites in Britain, such as the Williams and Thames Rivers, Llyn Cerrig Bach, Llyn Fawr, Flag Fen, Blackburn Mill and Carlingwark (Scotland).<sup>11</sup> Two Etrurian swords have been found, one in 7<sup>th</sup> century BCE Vetulonia and another in 4<sup>th</sup> century BCE Chiusia. The former was made of five strips of steel of varying carbon content, while the latter was made of a single ferrous bloom. A Roman sword has been found in a drainage system in Jerusalem, possibly dating to c. 66 CE. Another Roman sword has been found in Thrace (Bulgaria). The remains of Roman swords have been found in the excavations of the site of the famous battle of Teutoburg Forest, where the Germans slaughtered three legions led by Publius Quintilius Varus in 9 CE. Several Roman swords have been found in Pompeii. These are just a few of the steel swords that have been found. The reader needs only to visit online dealers specializing in ancient weapons to see images of many others, although the place and details of the find are often not given. Much more common are the sword hilts and scabbards that resist the ravages of time more successfully. Throughout Old World archaeology, one also finds the telltale evidence of sword cuts in the bones of human skeletal remains. Bronze and other copper alloy swords have been found of even earlier date. Given the massive exterminations in the BoM narrative, if they happened, similar finds would be inevitable, professionally dated to the pre-6<sup>th</sup>-century Americas.

Although our focus is on Pre-Columbian America, it is worth noting that the steel bow of Nephi (1 Nephi 16:18) is highly improbable. Actually, steel bows have existed for perhaps as much as two thousand years. During thirty years in the Semitic Middle East, I systematically collected premodern ethnographic artifacts, which eventually came to be my personal very focused museum of same, now on display in my home in Hawaii. I have an antique steel bow, made of spring steel with a silver layer on the front side of the bow and small inlaid gold nuggets. An almost identical one is on display in the museum in Riyadh, Saudi Arabia, dated to the nineteenth century. Although this may have been a ceremonial bow, early steel bows were used in hunting and warfare. The earliest development of steel bows appears to have been in India. There is indirect evidence that Indian metallurgists were experimenting with

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<sup>11</sup> Patrick Hunt, "Celtic Iron Age Sword Deposits and Arthur's Lady of the Lake," (Archaeolog, [http://www.traumwerk.stanford.edu/archaeolog/2008/02/celtic\\_swords\\_and\\_arthurs\\_lady.html](http://www.traumwerk.stanford.edu/archaeolog/2008/02/celtic_swords_and_arthurs_lady.html), accessed 10 Feb 2016).

them perhaps as early as the third century BCE.<sup>12</sup> Such a bow constructed in the seventh century BCE is extremely unlikely. In an intriguing verse (1 Nephi 16:21) Nephi says that his brothers' bows had "lost their springs." This appears to be a double misconception, first of how an ancient bow might have been constructed, and second, the date of the emergence of spring steel. The existence of Steel swords in that century, such as the sword of Laban, has to be addressed cautiously. Some sort of sword made of iron is attested perhaps as early as the sixth century BCE. Could a ferrous bow have been made eighty years earlier? We cannot rule this out. Furthermore, since early forms of steel existed, the best might be called "most precious steel" at the time, even if it would be called mediocre at best today. The steel bow found in Wyoming, now in the Jim Gatchell Museum in Buffalo, is in perfect unruined condition and considered to have been blacksmith-forged in the nineteenth century.<sup>13</sup>

### **Where Did All the Cities Go?**

The *Book of Mormon* mentions at least 40 cities by name, including only one Jaredite city. These are clearly distinguished from villages, such as Ani-Anti, and many others. (Mosiah 27:6; Alma 8:7 & 23:14 & Mormon 4:22 & 5:5) The fact that this civilization, its cities, inscriptions and artifacts have never been found anywhere in the Americas, has driven some to the assumption that the great Crucifixion Cataclysm at the time of Christ's crucifixion had vaporized everything. Venice Priddis and Arthur J. Kocherhans have made the most extravagant argument, *to wit*, that South America was largely below sea level until the crucifixion. The land that had been above sea level was the land of the *Book of Mormon*. At the time of the crucifixion, South America rose up thousands of feet in about three hours. Still, this leaves the locations prior to that event in the Andes highlands as candidates for exploration, where everything on the item list should be discoverable, in an ideal state of dry highland low-oxygen preservation. To save the day, her cataclysm should not have been just a sudden emergence from the deep, but also a kerplow, a turning over of the whole continent like a pancake,

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<sup>12</sup> D. Elmy, "Steel Bows in India," *Journal of the Society of Archer-Antiquaries*, vol. 12, 1969.

<sup>13</sup> Benjamin Storrow, "Mystery Aiming for Answers. Historic Wyoming Steel Bow's Origins Confound Researchers," *Star-Tribune*, 8 September 2013.

so that everything would wind up at the bottom. A sci-fi kerplow, or vaporization?<sup>14</sup>

Well, this is a lot of fun, but on a more serious note, and to be fair, most *Book of Mormon* cartographers minimize the effect of the cataclysm. After all, only some cities were destroyed, sixteen mentioned by name. (3 Nephi 8:15) Six were burned, five sunk into the earth, one sunk in the sea, three were flooded and one was covered by a mountain. When a city burns, it is still available for archaeology. The fire will just leave a burn level in the stratigraphy. A couple of major cities are said to have been rebuilt, including Zarahemla. This was followed by another four centuries of Nephite-Lamanite urban history, with cities and a material culture. Mormon around 322 CE observed, “The whole face of the land had become covered with buildings, and the people were as numerous almost, as it were the sand of the sea.” (Mormon 1:7) Furthermore, the Jaredites also built many cities. (Ether 9:23 & 10:12)

When a city undergoes a major cataclysm, this fact can be observed in the archaeological record. Slipping into the sea leaves a large debris field, and a ready candidate for marine archaeology. Fire leaves a burn level in the stratigraphy. Collapsed buildings not only leave their own debris, but often skeletons and artifacts under it.

It is important to note that north of the Rio Grande cities developed rather late. When they did, these were in the Mississippian region, with the largest city being Cahokia, which existed from about 700 to 1250 CE. Another urban civilization was the Pueblo culture, and particularly Chaco Canyon, where the term Anasazi is often used for the people and culture. Beginning c. 700 CE, it had its golden age from c. 900 CE to 1130 CE, when a 300-year drought brought about its decline. Cities in the BoM Nephite period have not been discovered in North America.

The last battles of both civilizations should have left behind a mass of steel swords, breastplates and helmets. In the Jaredite final conflict, millions of combatants fell to the sword, equipped with these items. In the end-of-days scenario for the Nephites, each of twenty-four commanders commanded 10,000 combatants, similarly equipped, resulting in 240,000 dead, and at least as many Lamanites. Both final confrontations happened in upstate New York. What a field day for weekenders wielding metal detectors.

### **BOM Cities and Civilian Construction**

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<sup>14</sup> Priddis, *The Book and the Map*. Arthur J. Kocherhans, *Lehi's Isle of Promise* (Fullerton, CA: Et Cetera Graphics and Printing, 1989).

The *Book of Mormon* mentions at least 40 cities by name, plus only one Jaredite city. These are distinguished from villages, such as Ani-Anti, and others. As people spread out, they built “large cities and villages in all quarters of the land.” (Mosiah 27:6; 23:14) The Jaredite ruler Shez “did build up many cities upon the face of the land.” (Ether 10:4)

Apologists have argued that all BOM construction was with wood, which rotted away and returned to the earth without a trace. If this were absolutely true, we would be faced with a conundrum. Stone construction was dominant in the parts of the Americas with high civilization, and the construction tradition of Judea was with stone where wood was somewhat scarce. There are a number of references in the BoM of buildings of wood. We also find references to "cities both of wood and cement" in the land northward. This gives rise to the observation that the BoM authors confused adobe with cement. (Helaman 3:7-11) Only years, or perhaps a decade after his arrival, Nephi constructed buildings as well as a temple, which he describes in glowing terms (2 Nephi 5):

15. And I did teach my people to build buildings, and to work in all manner of wood, and of iron, and of copper, and of brass, and of steel, and of gold, and of silver, and of precious ores, which were in great abundance.

16. And I, Nephi, did build a temple; and I did construct it after the manner of the temple of Solomon save it were not built of so many precious things; for they were not to be found upon the land, wherefore, it could not be built like unto Solomon's temple. But the manner of the construction was like unto the temple of Solomon; and the workmanship thereof was exceedingly fine.

There are other mentions of fine spacious buildings, as in Mosiah 11:

8. ...king Noah built many elegant and spacious buildings... ornamented ...with fine work of wood, and of all manner of precious things, of gold, and of silver, and of iron, and of brass, and of ziff, and of copper;

9. And he also built him a spacious palace, and a throne in the midst thereof, all of which was of fine wood and was ornamented with gold and silver and with precious things.

10. [he] caused that his workmen should work all manner of fine work within the walls of the temple, of fine wood, and of copper, and of brass.

11. And the seats ... he did ornament with pure gold; and he caused a breastwork to be built before them...

12. ...he built a tower near the temple; yea, a very high tower, even so high that he could stand upon the top thereof and overlook the land of Shilom, and also the land of Shemlon...

13. And it came to pass that he caused many buildings to be built in the land Shilom; and he caused a great tower to be built on the hill north of the land Shilom...

In archaeological fact, much has remained of wood-built sites, even without the original wood. These include earthen mounds or walls, and sometimes with stone city walls. Wood Henge in England and a temple in Hieraconpolis in Egypt have been reconstructed (in abstract) from postholes without the posts. In China, earthen walls and other remains have been preserved at Dongzhao, from various ancient periods (Prehistory, Shang and Zhou dynasties). In Yanxu, "excavations have uncovered over 80 rammed-earth foundation sites including palaces, shrines, tombs and workshops."<sup>15</sup>. Rammed-earth foundations often supported wood framing.

Buildings in China have been supported by wooden framing for as long as seven millennia. The emergence of the characteristic articulated wooden Chinese frame emerged during the Neolithic period. Seven thousand years ago, mortise and tenon joinery was used to build wood-framed houses. (The oldest are at Hemudu site at Zhejiang.) Over a thousand of these sites have been identified, usually with circular, square or olong shaped buildings. During the Yangshao culture in the Middle Neolithic, circular and rectangular semisubterranean structures are found with wooden beams and columns.<sup>16</sup>

In Spain, a range of remains was found at Los Millares, possibly the largest city in Europe in its day. A mass of information has been collected from the Durrington camp of the builders of Stonehenge. Note too the mound builders in North America.

The ancient cities of Babylonia provide us with a striking example of urban survival. In the plain where the Tigris and Euphrates flow, there is precious little wood and almost no stone. Some use was made of fired brick, and even rarely glazed brick. But most construction was done with

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<sup>15</sup> "Yinxu," in Wikipedia, en.wikipedia.org/wiki/Yinxu#Archaeological\_discoveries, accessed 07/03/2020.

<sup>16</sup> "Ancient Chinese Wooden Architecture," Wikipedia, en.wikipedia.org/wiki/Ancient\_Chinese\_wooden\_architecture#Structural\_features, accessed 07/03/2020.

sun-baked brick, which over time was covered by the accumulation of a tel and slowly returned to soil. Archaeologists work very carefully to locate the remaining outline of walls, which are almost indistinguishable from the soil that now encases them. After locating a wall, they slowly remove the soil on both sides, sifting every ounce in search of the tiniest object or fragment for analysis. This leaves the wall with just a few inches of soil on each side. One uses a brush to gently remove this soil, and little by little a clear outline of bricks emerges. Unless coated over with plaster before the end of a dig season, or roofed over, these walls become mounds of mud in the winter rains, and only the archaeological photos remain. Even so, with careful painstaking work, the walls and foundations of the city emerge. The objects found are used to identify the use of each structure to the extent possible.

Even if we limit BoM construction to that which the BoM authors knew best in New England, city remains should be found. Many Mormons have generally believed that BoM architecture also involved some stone monumental structures. David A. Palmer flirted with the idea that the Olmecs were the Jaredites.<sup>17</sup> E. L. Peay believed that “the ancient Maya and the Nephites are the same people.”<sup>18</sup> A good overview of assertions made regarding connections between the Olmecs, Maya and Aztecs, and the *Book of Mormon* peoples, can be found in the *magnum opus* of John L. Sorenson.<sup>19</sup> As writers become more aware of the wealth of archaeological and written information, this strategy has been losing steam. The sites are decorated with deities that are now well known, and with Mayan inscriptions that we can now read.<sup>20</sup>

### **Crucifixion Cataclysm: A Research Perspective**

In the *Book of Mormon*, at the time of the crucifixion of Jesus, the whole land was convulsed and swept with terrible destruction. This great

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<sup>17</sup> David A. Palmer, *In Search of Cumorah, New Evidences for the Book of Mormon from Ancient Mexico* (Bountiful, UT: Horizon Publishers, 1981), 125.

<sup>18</sup> E. L. Peay, *Lands of Zarahemla, A Book of Mormon Commentary* (Salt Lake City: Northern Publishing Inc., 1993), vi.

<sup>19</sup> John L. Sorenson, *An Ancient American Setting for the Book of Mormon* (Salt Lake City: Deseret Book Company, 1985), 96-137. Also John L. Sorenson, *Mormon's Codex, an Ancient American Book* (Salt Lake City: Deseret Books, 2013).

<sup>20</sup> Michael Coe, *Breaking the Mayan Code* (London: Thames & Hudson, 1999). See also the DVD documentary *Breaking the Mayan Code*, which shows step by step how Mayan was deciphered.

cataclysm was clearly intended to obscure the geography, so as to provide a way to evade the issue of the missing cities, and for many this has been its function in their faith. Such a major cataclysm, on a regional if not a bicontinental level, at a time not so long ago in geological time, would have left very obvious consequences. There are four areas of major investigation, any one of which should have found at least some evidence of this event, over a relatively broad territory and at the same point in time. Such a discovery would have been front-page news.

First, the Panama Canal involved massive earth moving over a long distance, creating a huge geological cross section. A special team of paleogeologists, paleontologists and archaeologists worked feverishly between the creation of the cross-section and the canal construction, to document everything of geological, paleontological and archaeological interest. At present, for the new expansion of the canal, the Smithsonian in collaboration with other institutions is taking advantage of this more recent massive earth excavation, to document geological and paleontological information.

Second, there has been extensive geological research, on land and offshore, in the whole area of the Chicxulub asteroid impact that wiped out the dinosaurs, on the coast of the Yucatan Peninsula. The same area had been extensively investigated by petroleum prospectors who obtained numerous core samples. These were inspected by those studying the asteroid impact. There has also been marine seabed research and investigation into the pattern and formation of the cenotes in relation to this impact. Cenote and other Mesoamerican cave exploration would also reveal the effects of such a cataclysm on these famously fragile structures (stalagmites, stalactites, etc.), datable by the subsequent formation of calcite deposits. Mexico is the site of some of the most outstanding and intricate caverns on the planet.

Third, there have been numerous archaeological excavations covering the first-century timeframe, that have done painstaking stratigraphy research, often with spoons and small brushes, sifting everything, and comparing the strata within and across sites, that would have detected such a disruption. At many sites, continuous occupation straddles the first centuries BCE and CE.

Fourth, there is all the modern development activity in what has become highly populated countries, including geological surveys in search of resources, highway construction and excavations for buildings, all of which have a history of discovering paleogeological and archaeological elements that were not within the original scope of work.

By the normal standards of secular research, given all of this, it is safe to say that the cataclysm story borders on tales inspired by smoking wacky tabaki.

### **BoM Fortification**

There are many mentions of fortified cities, some with earthen circumvallation, and others with defensive stone walls:

Yea, he had been strengthening the armies of the Nephites, and erecting small forts, or places of resort; throwing up banks of earth round about to enclose his armies, and also building walls of stone to encircle them about, round about their cities and the borders of their lands; yea, all round about the land. (Alma 48:8)

Here, we have both city walls, and border walls of stone. This is massive. So this being the case, is it conceivable that no stone was used in the construction of monumental buildings, of temples and palaces?

Furthermore, earthen berms or packed earth walls were so high that “the Lamanites could not cast their stones and their arrows at them that they might take effect...” (Alma 49:4) The Nephites “encircled the city of Bountiful round about with a strong wall of timbers and earth, to an exceeding height.” (Alma 53:4) Defensive walls were such that one needed “strong cords and ladders, to be let down from the top of the wall into the inner part of the wall.” (Alma 62:21) Far from constructions that could have easily disappeared, we read of massive walls of earth and wood, and stone walls, not just around cities, but round about the borders of the land.

The use of berm-and-ditch fortification is noted in Alma 49:

13. For they knew not that Moroni had fortified, or had built forts of security, for every city in all the land round about.

18. Now behold, the Lamanites could not get into their forts of security by any other way save by the entrance, because of the highness of the bank which had been thrown up, and the depth of the ditch which had been dug round about, save it were by the entrance.

The use of berms to enclose an area is ancient. Especially on flat ground the berm is associated with a ditch, not just because of its defensive value, but because the ditch is the source of the soil to raise up a berm. The circumference of a berm is less than that of the ditch, and the soil is



less packed than the native soil of the ditch, thereby producing a berm higher than one might expect compared to the depth of the ditch.

The first point to note here is that fortified cities of this nature survive extremely well. In England there are from two to three thousand hill forts, built in this manner.<sup>21</sup> Some were constructed in the Bronze Age, but the majority were built in the Iron Age, falling out of favor by the 2<sup>nd</sup> century BCE. The berm or berm-and-ditch structure is very well preserved in many of them. Originally thought to be nothing more than forts, some are now seen to have been or doubled as fortified towns.

When the early colonists arrived in New England, they noted the existence of raised earthen defense structures, which they attributed to a people prior to the Indians they encountered. Some still survive, but many have been plowed or bulldozed away. In the 1820's, more were in evidence to New England residents than can be visited today. They have been considered by some archaeologists to have been constructed under the influence of the mound builders to the west. Josiah Priest provides us with a description: "They [the fortifications at Marietta, Ohio] consist of walls, and mounds of earth, running in straight lines, from six to ten feet high, and nearly forty broad at their base. There is also, at this place, one fort, of this ancient description, which encloses nearly fifty acres of land."<sup>22</sup>

Although the BoM authors could have known about these earthen fortifications, it might be more probable that they had knowledge of those thrown up by their countrymen in the Revolutionary War and the War of 1812, for this construction persisted into the 19<sup>th</sup> century. An example is Fort Winchester on the Maumee River in Ohio, but closer to home is Fort George on the Niagara River.<sup>23</sup> A cursory reading of the BpM narrative reveals that its authors had more than a passing interest in military affairs, a trait that manifested itself later in Smith's formation of Zion's Camp and the Nauvoo Legion, which he commanded.

## Great Expectations

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<sup>21</sup> About 3,300 are listed in A. H. A. Hogg, "British Hill-forts: An Index" (Oxford: BAR Brit. Ser. 62, 1979). See also "Hillforts in Britain" (Wikipedia, accessed 08/12/16); and D. W. Harding, *Iron Age Hillforts in Britain and Beyond* (Oxford: Oxford University Press, 2012).

<sup>22</sup> Josiah Priest, *American Antiquities*, 40.

<sup>23</sup> Ronald J. Dale, "Fort George National Historic Site" (<http://www.eighteentwelve.ca/?q=eng/Topic/37>, accessed 9 January 2016).

If the *Book of Mormon* were an authentic history, the first thing that one would expect to find is the massive and extensive defensive stone walls and earthen berms. The latter have been found even in bronze-age forts and towns in England, and both were found at Los Millares, 5,000 years old. The BoM makes it clear that fortified walled cities existed in considerable number among the Nephites and Lamanites. Once found, the area enclosed would be investigated for foundations of buildings. Usually one does not find massive ancient temples, apart from Egypt and, of course, Central America. Often there is some sort of a promontory that would have been taken over for the palace or chief temple, an acropolis. The elevation achieved would befit the position and prestige of the ruler or governor, and would enhance its other role as a last redoubt, against invaders, or one's own people. The BoM describes large and impressive buildings. These would have had adequate foundations. At least the thresholds and other recognizable construction elements would have been of stone, and the floors a sort of burnished clay, lime plaster, stone or bricks. Principal buildings would include a palace, one or more temples or other shrines or places of worship, storage buildings for tribute in kind (crops), etc. In other sites, ancient wood structures are clearly delineated by the large postholes for the large beams. These have been found in many parts of the world. It is the case, for example, of a temple in predynastic Hierakonpolis in Egypt, and at Woodhenge (once paired with Stonehenge) in England.

The site would have no signage. Every little thing found and its location would be photographed, *in situ* when possible, labeled, stored and studied in a dig house, and catalogued. Frequently, buildings are identified by what is found in association with them. Apart from all this, four data sources are potentially very rich. First, the site would typically be littered with pot shards. Some pieces would be distinctive enough to identify the culture, i.e., the people of the site. It is also possible that some otherwise unremarkable shards will bear some writing, a votive text on an offering jar, or graffiti, a curse against the king, a message passed between lovers, or simply, "Jonathan was here," or "made by Jacob". A second source of data would be the findings at a butcher or sacrificial site, where bones of animals would be found. A third, and very rich site would be the rubbish mound, which would be stratified to a degree, with dating possibilities. Finally, a fourth site would be that for the burials. Both Hebrews and Egyptians honored their dead, and took pains to bury them properly. The Book of Mormon contains references to a sepulcher (Alma 19:1, 5). There may be humble burials, richer burials of the notables, and more impressive burials of the rulers. Here

one would expect to find grave goods appropriate to the culture, possibly bone boxes, and commemorative and blessing inscriptions.

Agricultural activity, food production, preservation, storage and preparation all leave signs, even artifacts. Fields yield valuable information regarding crops. Soil analysis would allow the examination of pollen, which is extremely durable, revealing the crops grown. Wheat is processed at long-term, even ancestral threshing floors, which should be found, and yield pollen and other trace evidence. Then it is taken to winnowing sites. Bread ovens should remain (maize is not suitable for bread). Wheat straw is used for basketry, fodder and dung fuel. Bran is used to fill cushions. One could not just run over to a grocery store like today. Families would have grain storage jars or clay bins, while grain dealers, temples and palaces would have large grain storage buildings sufficient to keep out rain and pests, and pay their retainers. Wine not only implies the existence of a suitable species of grape, but also wine presses. Wine storage skins or jars would still bear trace evidence.

Every site would have its own history, and ecological/historical vicissitudes. Some may be partially or largely covered over by soil and vegetation. Others may be wind-swept. Lucky sites might have had a mountain (mud slide?) fall on them, or volcanic ash. A site at the bottom of the sea would be in a cold and oxygen-starved environment. Ancient wood ships have been recovered from the sea in good repair, and Viking burials in wood ships fare well under the ground. Pompeii was protected by volcanic ash. They would also vary with respect to pillage. Earthquakes might cause objects to be covered up, including coinage, if it exists. Surprisingly, coins are almost always found. Islamic coins have been found as far away as Scandinavia. Then there are treasure troves, hidden in response to invaders, or the Gadianon robber threat, at various times, but especially in the last years of the Nephites: “And these Gadianon robbers, which were among the Lamanites, did infest the land, insomuch that the inhabitants thereof began to hide up their treasures in the earth.” (Mormon 1:18)

If the Nephite/Lamanite civilization ever existed, all of the items in this study would be found. Most would be collocated in the same find, a whole city.

### **Mother, the Emperor Has No Clothes! Revealing Lidar & GPR**

Lidar, an aerial-based radar system, does not detect vegetation, but readily penetrates it, reflecting back off of soil and rocks. Time delays

allow high resolution 3D maps to be made. Maps vary depending on the resolution: HR (high resolution) and VHR (very high resolution). *The rainforest vanishes*. By contrast, aerial ground penetrating radar (GPR) has now been developed to detect objects beneath the surface of the earth. UAS Vision (Unmanned Aircraft Systems community) has stated that objects have been detected at a depth of 10-16 meters below the ground surface. Once maps are produced, then boots-on-the-ground archaeology takes over, with ground-based GPR, machetes, shovels and trowels. In Guatemala, in a very wide region centered on Tikal, many unknown sites were discovered by aerial Lidar, and initially each was investigated just enough to verify that they were Mayan.<sup>24</sup>

In other words, the age when creative minds can make any sort of argument in the dark shadows of the unknown is nearing its end.

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<sup>24</sup> Press release of UAS Vision (Unmanned Aircraft Systems community) Posted in Electronic Sub-Systems, News on October 18, 2017 by The Editor. Roger Atwood, "Connecting Two Realms [Montegrando & Chavín de Huántar], Archaeologists rethinking the early civilizations of the Amazon," *Archaeology Magazine*, July/August, 2017 (accessed online, <https://www.archaeology.org/issues/266-1707/letter-from/5653-letter-from-peru-spiral-temples>).