Out of the Dust: Steel in Early Metallurgy

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During the 19th century, critics of the Book of Mormon claimed that steel was not known in the Near East or ancient America during the appropriate Book of Mormon times. This assertion, if true, would discredit the authenticity of the Book of Mormon. However, in more recent decades, proof that Mesopotamian peoples used steel has been revealed. This discovery means that steel was used well before the oldest Book of Mormon people lived. Further research regarding steel in ancient America is still necessary; however, it appears that five Mesoamerican proto-languages have a word for metal, suggesting that the people who spoke those languages were familiar with some form of metal.
Steel in Early Metallurgy

John L. Sorenson

In the Book of Mormon, Nephi reports that Laban’s sword had a blade “of the most precious steel” (1 Nephi 4:9). He also says that his bow “was made [in part, at least] of fine steel” (1 Nephi 16:18). In America, Nephi taught some of his people to work in iron and steel (see 2 Nephi 5:15). A couple of centuries later, the Nephites were still making objects of iron and steel (see Jarom 1:8), although nothing more is told of those metals during the final 800 years of Nephite history. Moreover, Ether 7:9 reports that even the Jaredites “made swords out of steel.”

The credibility of these statements was quickly challenged by 19th-century critics, and the charge has been echoed almost up to the present. The complaint was twofold: (1) “steel” was not known in the Near East in Nephi’s day, and (2) neither iron nor steel was known in ancient America at any time. Both criticisms are now out of date in the light of scientific and historical research done over recent decades.

“The first smelting of iron [ore] may have taken place as early as 5000 BC” at Samarra, Mesopotamia, but more commonly early iron was recovered from fallen meteors (yielding iron with a characteristic 4+% nickel content). By the middle of the fourth millennium BC, “both texts and objects reveal the presence of iron” in Mesopotamia, from where the Jaredites departed. Just possibly they brought with them to the New World technical knowledge of that metallurgy. Sporadically throughout the Bronze Age (about 3500 BC–1000 BC) in the Near East, wrought (non-meteoritic) iron objects were being produced, along with continued use of the meteoritic type. Yet details of the history at that time are poorly known. The find of an iron artifact from Slovakia dated to the 17th century BC leads one researcher to lament “how little we actually know about the use of iron during the second millennium BCE.”

Steel is “iron that has been combined with carbon atoms through a controlled treatment of heating and cooling.” Yet “the ancients possessed in the natural (meteoric) nickel-iron alloy a type of steel that was not manufactured by mankind before 1890.” (It has been estimated that 50,000 tons of meteoritic material falls on the earth each day, although only a fraction of that is recoverable.) By 1400 BC, smiths in Armenia had discovered how to carburize iron by prolonged heating in contact with carbon (derived from the charcoal in their forges). This produced martensite, which forms a thin layer of steel on the exterior of the object (commonly a sword) being manufactured. Iron/steel jewelry, weapons, and tools (including tempered steel) were definitely made as early as 1300 BC (and perhaps earlier), as attested by excavations in present-day Cyprus, Greece, Turkey, Syria, Egypt, Iran, Israel, and Jordan. “Smiths were carburizing [i.e., making steel] intentionally on a fairly large scale by at least 1000 BC in the Eastern Mediterranean area.”
From this history, incomplete as it necessarily is, we see that the blade on the “sword of Laban” (1 Nephi 4:9; 2 Nephi 5:14) was an outcome of a long process of technological development and is historically credible as steel. However it was that Nephi became schooled in making steel, he knew enough to be a transfer agent through which that technology moved to the New World.

In America there is little archaeological evidence for metallurgy in the Book of Mormon period. Fragmentary evidence is available for certain metallurgical activities in Peru as early as 1700 BC, but it took many centuries there before the craft noticeably flourished. It may be that that area was an intermediate source for some of Mesoamerica’s metallurgy. Orthodox archaeologists insist that no metals were used in Mesoamerica before about AD 900. However, scores of specimens have been identified that seem to date earlier.4

Decisive data for an earlier date come from words for metal (or for bell)5 that appear in five proto-languages that have been reconstructed from surviving daughter tongues:

Proto-Mayan. Descended from Proto-Mayan (estimated at 2200 BC), Proto-Tzeltal-Tzotzil, with a word for metal, dates to about AD 500.6 Yet Huastecan, a Mayan language, also has such a word7 and is considered to have split from the main Mayan group by 2000 BC.

Proto-Mixtecan. A reconstructed Proto-Mixtecan word for metal, or bell, has been dated to about 1500 BC.8

Proto-Mixe-Zoquean. A widely cited study identifies Proto-Mixe-Zoquean as probably a (or the) tongue spoken by inhabitants of the Olmec area before 1000 BC,9 and this proto-language included a word for metal.

Proto-Huavean and Proto-Otomanguean. Words for metal in these two proto-languages are of uncertain date but in any case date to before AD 900.10

In recent decades, the continued discovery and analysis of metal artifacts both in the Near East and in Mesoamerica have changed our picture of technological history. The expectation that the history will change further in years to come is entirely realistic. Those who try to relate the Nephite record to archaeological and historical facts with regard to metals have improved the strength of their position with recent finds. It will be important to clarify that relationship as the years go on by being critically and reliably informed about new discoveries. Incomplete scholarship will not help those who love truth.
John L. Sorenson


5. See Van der Merwe and Avery, “Pathways to Steel,” 146.


10. See Harvey Harlow Nininger, Find a Falling Star (New York: Paul S. Erikson, 1972), 238.


15. While it is theoretically possible that presence of a name does not require physical presence of the object so labeled, in this case from where else could the names for metal have been borrowed?


17. See Marcelo Alejandre, Cartilla Hausteca con Su Gramática, Diccionario, y Varías Reglas para Aprender el Idioma (México: Oficina Tipe de la Secretaria de Fomento, 1890), 80, 88.

