

# Antique Texts Concerning Iron

## The Bible

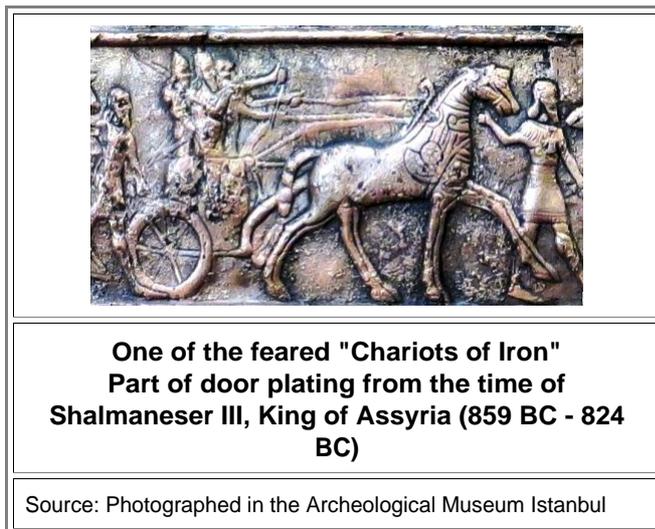
✓ We are only interested in texts from before about 1200 BC when iron came into its own. As far as the Bible is concerned, only the (purely Jewish) Old Testament qualifies.

There are numerous references in the the Old Testament to metals in general and iron in particular, none of them very enlightening. One Charles Wilkins (1831 - 1913) in his 1903 Book. "The History of the Iron, Steel, [Tinplate](#) and other Trades of Wales" gives the following numbers:

● **References to iron:** *numerous*. Examples:

- Smite him with an instrument of iron. *Numbers*
- And the sons of Israel cried to the LORD Jehovah, for he had nine hundred chariots of iron. And he mightily oppressed the sons of Israel twenty years. *Judges 4:3*
- Og's bedstead was a beadstead of iron. *Deuteronomy*
- But as for you, the LORD took you and brought you out of the iron-smelting furnace, out of Egypt, to be the people of his inheritance, as you now are. *Deuteronomy 4:20*
- A land whose stones are iron. *Jeremiah*
- Thresh Gilead with instruments of iron. *Amos*
- The fourth kingdom shall be strong as iron. *Daniel*
- Can a man break iron - iron from the north - or bronze? *Jermiah 15:12*
- And the LORD was with Judah; and he drove out the inhabitants of the mountain; but could not drive out the inhabitants of the valley, because they had chariots of iron. *Judges 1:19*

The last one is of fleeting interest. The LORD looses against chariots of iron?



● Then we have *Genesis 4, 17-22*:

17. *Cain* made love to his wife, and she became pregnant and gave birth to Enoch. Cain was then building a city, and he named it after his son Enoch.
18. To Enoch was born Irad, and Irad was the father of Mehujael, and Mehujael was the father of Methushael, and Methushael was the father of Lamech.
19. Lamech married two women, one named Adah and the other Zillah.
20. Adah gave birth to Jabal; he was the father of those who live in tents and raise livestock.
21. His brother's name was Jubal; he was the father of all who play stringed instruments and pipes.
22. Zillah also had a son, Tubal-Cain, *who forged all kinds of tools out of bronze and iron*. Tubal-Cain's sister was Naamah.

This can be taken as evidence that bronze and iron making predates "The Flood", an event that happened certainly before 1200 BC, if at all. It also can be taken as evidence that the author of Genesis lived after 1200 BC since he knew about iron.

● There is, however, an indirect reference to iron (the word itself does not appear) in *I Samuel 13:19-22* that has produced some commotion:

19. Now there was no smith found throughout all the land of Israel: for the Philistines said, Lest the Hebrews make them swords or spears:
20. but all the Israelites went down to the Philistines, to sharpen every man his (*plow*) share, and his [coultter](#), and his axe, and his mattock (*hoe*).

21. Yet they had a file for the mattocks, and for the coulter, and for the forks, and for the axes, and to sharpen the goads (*prick*).
22. So it came to pass in the day of battle, that there was neither sword nor spear found in the hand of any of the people that were with Saul and Jonathan: but with Saul and with Jonathan his son was there found.

All the strange words refer to agricultural tools, possibly made from iron (but that is not clear), that had to be brought "down" to the Philistines for sharpening. This passage has been construed to mean that the Philistines had some kind of monopoly on iron making and working in the late 11th century when this was written. However, this is not certain and other evidence does not support this idea.

### ● **References to steel:** Three

- He teacheth my hands to war; so that a bow of steel is broken by mine arms. *2 Samuel 22:35*
- He shall flee from the iron weapon, and the bow of steel shall strike him through. *Job 20:24*
- Shall iron break the northern iron and the steel? *Jeremiah 15:12*

### ● **References to tin:** Five. Examples:

- And I will take away all thy tin. *Isaiah*
- As the gather lead and tin into the furnace. *Ezekiel*

### ● Then we have **84 references to brass, 267 references to gold** and **122 references to silver**.

Of course, nobody knows what the actual authors had written long ago. What is cited above is what you get after many copies of the original had been made (most of them lost) plus several translations; [this link](#) digs a bit deeper. So when we read "steel" in some modern Bible version, we do not really know what exactly the original author wanted to say.

Even more important is the question *when* those remarks were written. Or in other words: How old is the Bible?

● The Old Testament of the Bible (more or less the same as the Jewish "bible") has been written over a time span of 1500 years or so. The first five books (Genesis, Exodus, Leviticus, Numbers and Deuteronomy), sometimes called the Pentateuch, are considered to be the oldest parts. They are considered to go back to about 1200 BC, the ominous date of the [Bronze age collapse!](#) The rest is considerably younger.

What we learn from the Bible about the history of iron and steel is easily summarized: *nothing at all!* Iron and the other metals were well-known when most of the remarks to these metals were written. Jahwe also put more emphasize on using iron and steel to kill or subdue people than on making it. No recipe for making iron or steel was revealed. This stays in the general tradition of all religions that nothing directly useful was ever revealed from up high through prophets or other media.

### **Homer's Iliad / Odyssey**

There are many references to metal, in particular bronze, in these books. They were written between 1300 BC and 700 BC - the discussion about that is still going on. 800 BC seems to be the present favorite. As far as iron / steel is concerned, there are references to iron wheels and what not (I simply don't know). One particular interesting section describes the quenching of hot iron / steel as a way to make it strong (*Odyssey. Book 9, lines 390 ff*):

● They lifted up that stake of olive wood  
and jammed its sharpened end down in his eye,  
while I, placing my weight at the upper end,  
twisted it around—just as a shipwright  
bores a timber with a drill, while those below  
make it rotate by pulling on a strap  
at either end, so the drill keeps moving  
— that's how we held the red-hot pointed stake  
and twisted it inside the socket of his eye.  
Blood poured out through the heat—around his eye,  
lids and brows were singed, as his eyeball burned  
— its roots were crackling in fire. **When a blacksmith  
plunges a great axe or adze in frigid water  
with a loud hissing sound, to temper it  
and make the iron strong**—that's how his eye  
sizzled around the stake of olive wood.

● Archeological evidence does seem to support the view that quenching was a known technique in 800 BC or even earlier. Otherwise the great books do not seem to contain anything more of real interest to iron and steel making.

## Hittite / Mittanni / Amarna Letters

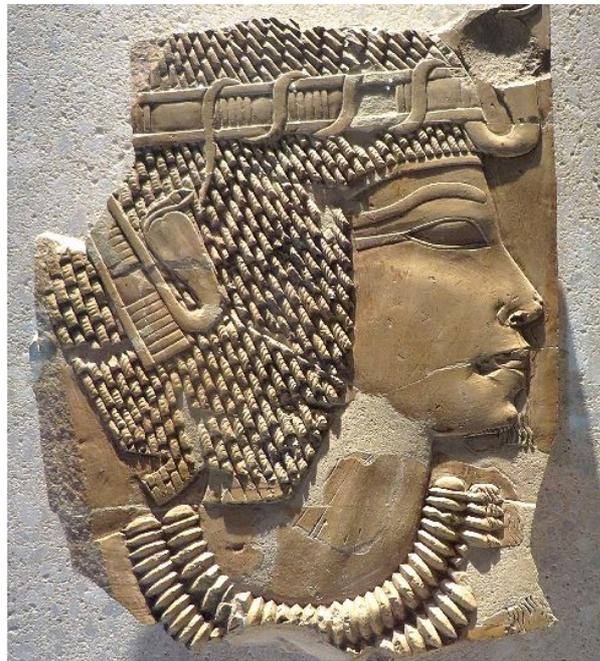
The Hittite empire was located in [north-central Anatolia](#) and became prominent around the 18th century BC. During the mid-14th century BC it reached its zenith, encompassing most of Asia Minor plus parts of the Levante and Mesopotamia. It came to an end during the [Bronze Age collapse](#) after 1180 BC. Right at its southern end was the Mittanni kingdom that is also interesting in this context.

A long-held view (now challenged) claimed that the Hittites were the "inventors" or at least the first masters of iron technology. This view appears to be more based on their extensive writings concerning iron than on the few iron / steel artifacts actually found. Of particular interest are two letters from a diplomatic correspondence:

● **First Letter:** A Hittite ruler (possibly Hattusilis III (1282 BC - 1250 BC) writes to an Assyrian prince:  
"In the matter of the good iron about which you wrote, good iron is not at present available in my storehouse in Kizzuwatna. I have already told you that this is a bad time for producing iron. They will be producing good iron, but they won't have finished yet. I shall send it to you when they have finished. At present I am sending you an iron dagger-blade."

Does "*good iron*" refer to steel? How does one translate cuneiform into modern words?

● **Second Letter:** The Mittanni King *Tushratta* writes to **Pharao Amenhotep III** (about 1386 BC - 1350 BC). This letter, written in cuneiform on clay, was preserved together with many others in the royal archives in Amarna, the capital of the enigmatic Pharao **Akhenaten** or Amenhotep IV (1350 BC – 1330 BC), husband of [Nefertiti](#).



Pharaoh Amenhotep III; husband of [Tiye](#)

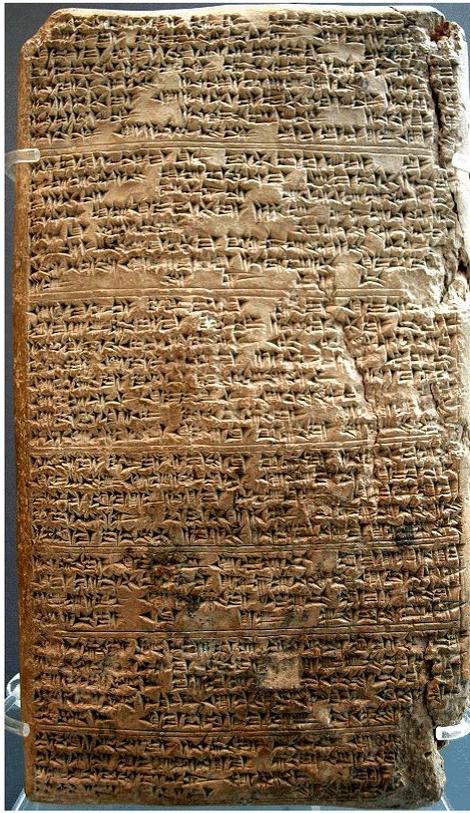
Source: Photographed 2015 in the Neues Museum, Berlin

Strangely enough, the letter of interest to us here seems to be among the very few not easily found in the Net. Anyway, Tushratta mentions in his notes the shipment of gifts to Egypt, "[including daggers with steel and iron blades](#)".

This indicates that the difference between iron and steel was known around 1360 BC, more than 100 years before the Bronze age collapse. Being a bit less specific we might simply assume that those guys just knew that there could be *different grades of iron*.

This letter ties in beautifully with the archeological find of King Tut's iron dagger. **Pharao Tutanchamun**, to give the boy his full name, was the son of Akhenaten and thus the grandson of Amenhotep III. [His dagger](#) might be the one mentioned in the Amarna letter or another one given as a gift from Hittites or others around then.

Here is a "Tushratta letter". As far as my cuneiform goes, it is not *the* letter, though.



**Amarna letter EA 19 in cuneiform ;  
Tushratta writes to Pharaoh Amenhotep III**

Source. Wikimedia commons; author CaptMondo

Both letters allow one simple conclusion: iron or steel daggers were extremely precious objects around 1300 BC. They made for kingly gifts and were far more valuable than gold. That is the same conclusion that follows from evaluating the stuff in King Tut's grave. It also follows from business correspondence in and around the Hittite empire (see below).

### **Kültepe Letters, Bogazköy (=Hattusa) , and Anatolia in General**

Kültepe in Turkey is a quite famous archeological site; I have devoted a special module to it. Here it is only important to know that an immense library of essentially business letters survived because the business district of Kültepe (a kind of Assyrian merchant colony) burned down twice. While that was disastrous for the inhabitants, the fire provided for a kind of monstrous kiln where the soft clay tablets with the cuneiform inscription got fired to hard and durable ceramics.

This has happened in many other places, too, and explains why a lot more cuneiform writings in fired clay survived until today than writings on papyrus or other short-lived substrates.

What follows is mostly from an article of Ünsal Yalçın [1](#).

The Kültepe texts from the early 2nd millennium (say 1800 BC) make clear that iron was *extremely* precious around then. It was only supposed to be traded for gold and silver but not for copper. One letter refused an offer of eight shekles of gold for one shekel of iron. Forty shekles of silver could buy one shekel of iron, and only small amounts were traded.

Here is one of those letters, still encased in its partially destroyed clay envelope:

[Misc. Link](#)

**Kültepe**



**Letter from Kültepe in partially destroyed envelope**

Source: Turkish Airline Journal; Thanks for sharing.

- Old Hittite sources also describe iron as extremely precious material, linked to kings and queens. Some text liken words of the king to the unbreakability and immutability of iron. Thrones and scepters - large objects - of iron are mentioned, prerogatives of a king. The first written account of iron used for weapons comes from Tell Açına; province Hatay, from 1800 BC: iron was used for 400 "sukur", probably spear points. In the heydays of the Hittite empire iron is mentioned quite a bit. On the other hand, the archeological evidence counts just about two dozen finds. [This link](#) shows all the objects in the "Early Iron Age" display case in the Archeological Museum in Istanbul (haha)!

▶ The second major city in this context is **Bogazköy**, also called **Bogazkale**, the present day town next to **Hattusa**, the capital of the Hittite Empire in the late Bronze Age. Both names are used like synonyms in the literature.

- Hattusa was torched in 1700 BC but rebuilt in the second half of the 17th century BC. It thrived from then on. 27 Kings or better Emperors succeeded each other until about 1180 BC, when the empire came to an end during the [Bronze Age collapse](#).

Thousands of clay tablets from the royal archives have been found, and many references to iron appear. What becomes clear is that the value of iron decreased substantially from its extremely high value around 1800 BC to far below that of gold and silver around 1200 BC.

We also learn that iron developed from a luxury item to a commodity. What we don't learn, however, is how iron was made. The best that can be found are listings of artisans including "iron smiths".

The high point of the Hittite iron literature is the famous letter of Hattusilis III (1282 - 1250 BC) already [dealt with above](#).

- The Hittites, as the letter makes clear, differentiated between regular iron ("An.Bar") and somehow better iron ("An.Bar Sig"). If the regular iron refers to wrought iron and the "better" iron denotes steel is anybody's guess. Then they had "An.Bar Ge", sometimes interpreted as iron from heaven, i.e. meteoritic iron. However, in other texts the sky is likened to iron so iron - sky connections may not relate to [meteoritic iron](#) at all

▶ We simply must accept that there is no definite and safe translation of words from dead languages into present day technical lingo. German archeologists 3000 years from now, when running across the word "steel" in writings of the long since dead language "English", will have a huge problem. "Muscles like steel"? This-and-that steel? S355J2G3 steel?

### **Hammurabi**

▶ Hammurabi, the sixth Babylonian king, produced a famous "code" or book of 228 laws around 1770 BC. The Hammurabi code specifies exactly how much things should cost and what kind of punishments should be meted out for crimes.

- For example, if a wife besmirched the repudiation of her husband, she was to be put to death by strangling, drowning, precipitation from a tower or pinnacle of the temple or by the **iron sword**. Those were the good old times.

Actually, wives also had a lot of rights in Hammurabi's code and men needed to watch out, too

[Misc. Link](#)

**Hattusa**



**Hammurabi stele with (parts of) his code**

Source: Louvre, Paris; all over the Net

● More interesting, perhaps, is that codes in Hammurabi's time specified that

- 6 Shekel (weight measure) of silver=1 shekel of gold.
- 8 Shekel of silver=1 shekel of iron.

In other words. Iron was more expensive than gold. That changed quickly, however, and iron became much cheaper.

▣ This is mildly interesting. We learn that iron was definitely known to the Babylonians in 1770 BC (or 570 year before the ominous year 1200 BC) and that it was extremely precious.

### Assyrians

▣ I only added this paragraph to point out [this reference](#) :

● **Caroline van der Brugge**: "IF I HAD KNOWN THAT MY LORD WANTED IRON". The beginning of the common use of iron in Assyria

▣ You will find a detailed account of Assyrian (and other) cuneiform texts concerning iron.

### Alexander the Great and the Greeks

▣ Alex (356 BC – 323 BC) first introduced the phenomena of guided mass tourism to the unsuspecting world at large. He moved hither and thither with his crowd, visiting most places just once, taking in the sites, the souvenirs, the maidens and so, just like modern tourists. He just forgot to pay most of the time.

● He must have had a rather good sword because he could slice through the Gordic Knot in just one stroke. Nothing has been recounted about his sword, however. It didn't have a name, it seems - in contrast to his beloved horse Bucephalus.



**Alexander, with Bucephalus and a sword, fighting the Persian King Darius III. About the only old picture of him.**

More [here](#)

Source: Photographed 2018 in the Naples National Archaeological Museum

▲ Alexander comes in rather late in the history of iron. He is only interesting here for making two points:

1. It seems to be recorded (I couldn't find the source) that he ordered his generals to seize any iron found. But not for making weapons! The iron was to be used for polishing diamonds and other stuff. The general recipe for [polishing](#) is to make a metal disc, coated with a fine abrasive. If the metal disc is made from iron, it can hold and embed diamond powder just like copper but presumably does not wear off quite as fast as copper.
2. King Purushottam (Porus) of India presented a steel (?) sword to Alexander in 326 BC. This not only tells us that the Indians made steel swords by then but that a good steel sword was still an expensive item, fit for a supreme royal gift. Some claim that this was wootz steel but that is open to doubt.

▲ The ancient Greeks in general left plenty of texts. I've already dealt with Aristotle's mastery of [science issues](#) in general and that [of steel in particular](#). The rest isn't much better, it appears.

- The Greeks, however, distinguished between "sideros"=iron and **Chalybs**=steel since the first millennium BC. Both words left traces: "Siderophile" means iron loving. Gold, for example, is a siderophile element that can dissolve iron, and the word "chalybs" is contained, albeit veiled, in "[Excalibur](#)". The Chalybes, actually, were a people somewhere in Anatolia, and the Greeks assumed that they knew how to make the good stuff. Much around that is unclear, however, and all we can note is that the Greeks themselves obviously were not up to fully mastering iron and steel around 1000 BC when others already did.

### What Did We Learn?

▲ What did we learn from all these early texts? Next to nothing about the making of iron or steel. But a few general facts do emerge from the texts alone; one need not have artifacts to back them up:

1. Some people somewhere in the Mediterranean did make iron long before 1200 BC. However, only small amounts and with fluctuating quality.
2. It was known very early on that there are different grades of iron / steel. "Good" iron was an extremely precious object before about 1200 BC.
3. Some people also knew how to work with the precious material. They must have been smiths in contrast to the mould makers and "casters" working with bronze.
4. The know-how about iron making did not "diffuse" out from wherever it was existed for quite a while. Only some people in some places (e.g. the "Chalybs") knew the tricks. Iron making and working may have been a jealously guarded "state" secret.
5. Iron became more common and cheaper as we get closer to 1200 BC. With the collapse of the Bronze age it finally came into its own.

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1) Ünsal Yalçın: "Frühe Eisenverwendung in Anatolien" *Istanbuler Mitteilungen*; Band 48 (1998) p.79 - 95