

at length such high temperatures were reached that the iron melted and ran out of the bottom of the furnace in a continuous stream. This was the origin of the modern blast furnace, which has the advantage of continuous production, but produces a very inferior metal, since molten iron absorbs impurities much more readily than the spongy iron of the primitive process.

Very recently, however, modern industry has taken a suggestion from the primitive process. Since the reduction of the iron ore in any furnace is accomplished rather by carbon monoxide than by solid carbon, and since molten iron accumulates impurities, why not reduce the ore directly by carbon monoxide gas at temperatures below the melting point of iron? A company has recently been formed in Germany with an estimated yearly output of 20,000 tons of sponge iron or mild steel by the new process. If the results are satisfactory the production will presently be very much increased.

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### QUALITY OF EARLY IRON DOUBTFUL

In the time said to have been covered by the Homeric epics (1400-1200 B. C.) iron had not yet come into general use for making weapons, bronze being the metal

still used for this purpose. Some investigators claim that this may have been due to the fact that the iron extracted in early times was quite impure and of unreliable quality. The metal was prepared at that time by heating it in crude furnaces (page 2), whence it was removed as a spongy product more or less contaminated with earthy material. The carbon was distributed through it very unevenly because the mass was not heated hot enough to melt it. A sword made of iron of this quality would not be able to retain a cutting edge and it would bend if it received much of a blow. For a soldier to be obliged to halt and straighten his sword on the field of battle would certainly give his adversary a decided advantage.

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### FIND BRONZE AGE SWORDS

But Schoolboys Fail to Realize the Value  
of Ancient Weapons

*New York Times, February 22, 1930*

Copenhagen, Feb. 21.—A remarkable discovery of antiquities is reported from Jutland, where a teacher was scolding boys who were fighting when he discovered they were using rusty swords which have been proved to have originated in the bronze age. The boys explained they had found the swords in scrub grass outside the school.

Unfortunately the boys, who did not realize the value of the swords, had been spoiling most of the weapons.

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### DRAFTS

One of the essential features of a furnace used to reduce iron from its ores is the oxygen supply, since the rate at which oxygen is furnished de-