

IRON AND STEEL.

speaking of iron as having been in use from time immemorial. Nebuchadnezzar in an inscription telling of his works of improvement in Babylon says: "With pillars and beams plated with copper and strengthened with iron I built up its gates." His daughter Nitocris built a bridge the stones of which were held together by bands of iron fixed in their places by molten lead. At Nineveh, Layard found numerous relics, including "a perfect helmet of iron, inlaid with copper bands," as well as many other articles of iron, "Two or three baskets were filled with these relics."

In Egypt iron was used in the earliest times. In 1837 a piece of iron was taken from an inner joint of the great pyramid at Gizeh, and is now in the British museum. The almost universal opinion of the best Egyptologists places the erection of that edifice at about 4,000 years before our era, so that this venerable bit of rusty metal is undoubtedly the oldest piece of manufactured iron of which men have any knowledge. Wilkinson copies an engraving showing the process of smelting iron by the aid of bellows in the shape of leather bags, trodden by a man who exhausts the air from one while with a string he raises the other and permits it to be refilled. Butchers are depicted on the monuments wearing steels such as are used to-day. Sickles and other weapons of steel are pictured in great numbers and colored blue to distinguish them from the bronze weapons which are colored red. Belzoni found an iron sickle under the foot of a sphinx at Carnac, and it is now in the British museum. Kenrick, in "Ancient Egypt under the Pharaohs" copies an account of a military expedition made by Thothmes I., who reigned about 1700 years before our era. From some of the Deltan Kings this monarch received as tribute or presents gold and silver, as well as "bars of wrought metal, and vessels of copper, and of bronze, and of iron." From the region of Memphis he received wine, iron, lead, wrought metal, animals, etc. When I read that the same King in a successful foray against "Chadasha" took much booty, including "iron of the mountains, 40 cubes," I was tempted to think that Jerusalem must have been meant; but I believe the Chadasha mentioned, is understood to be a city of the Khetas or Hittites, and not Jerusalem, the Khodesh or sacred city of the Jews, and El Khuds of the modern Arab.

The dawn of history finds iron in use among the Greeks. One legend, and the most probable, says they derived a knowledge of it from the Phœnicians, while another says that the burning of the forests on

Mount Ida smelted the iron ore exposed to the flames, and revealed the secret of working in iron. That such could have been the case is next to impossible.

Homer speaks of iron and weapons of iron and steel—rarely in the *Iliad*, frequently in the *Odyssey*. I leave the Wolfian and other Homeric scholars to decide whether any particular significance attaches to that fact. Nor will I pretend to say whether or not Homer had historic knowledge enabling him to decide that iron implements and weapons were used during the siege of Troy, say about 1,200 years before our era, or whether he simply supposed conditions similar to those he saw around him to have existed in the days of which he wrote, just as Shakespeare supposed cannon to have been used in the days when the Danes governed England. Homer mentions axes of steel. Gladstone, in his *Homeric Synchroisms*, says: "Iron is in Homer, exceedingly rare and precious. He mentions nothing massive that is made of this material." Among the prizes offered at the funeral games of Patroclus is "a mass of shapeless iron from the forge," and Achilles says:

Stand forth, whoever will contend for this;
And if broad fields and rich be his, the mass
Will last him many years. The man who tends
His flocks or guides his plow need not be sent
To town for iron; he will have it here.

We may infer from this that iron was very valuable, for the mass in question was no more than a man might lift; and that it was used in agriculture before it was utilized for the manufacture of arms or armor.

As early as 700 years before Christ the iron ores of Elba were worked by the Greeks, who called the island *Ethalia*, "from the blazes of the iron works." Strabo says that at the beginning of our era the iron mines of Eubœa were exhausted. Glaucon of Chios made a silver cup, inlaid with iron about 560 B. C. Sophocles, 400 B. C., speaks of the tempering of iron in water, and it is certain that steel swords were made about the same time. The father of Demosthenes made steel arms. When Xerxes invaded Greece, the Assyrians who accompanied him were armed with clubs, "knotted with iron." Daimachus, a Greek writer of Alexander's age, mentions four kinds of steel, the Chalybdic and Synopic, from which ordinary tools were made. The Lacedæmonian, from which were made files, augers, chisels and stone-cutting implements; and the Lydian, which was used in the manufacture of swords, razors, and other surgical instruments. Iron sickles and other agricultural implements were common in the time of Alexander.