NATIONAL LIBRARY CANADA BIBLIOTHÉQUE NATIONALE

## IRON AND STEEL.

## A Brief Historic Sketch of their Manufacture and Use.

## A PAPER READ BEFORE THE HAMILTON ASSOCIATION, MARCH 23, 1882, BY A. T. FREED.

It is customary to speak of the stone, the bronze and the iron ages of the world, as if they were distinctly marked epochs. It is a mistake so to regard them, for whilst our fathers undoubtedly abandoned stone weapons and implements for bronze, and bronze for iron, the change took place at widely remote periods in different countries, and the periods in which the several materials were used in the same country overlapped each other. National intercourse was slow and restricted in the early ages of the world, and one nation would be in full possession of an important discovery long before another not distant nation had heard of it. The bronze age had come and gone on the shores of the Mediterranean, and iron was in general use while as yet the Skandinavians and Britons were rudely carving deers' horns with flint knives and destroying their enemies with bludgeons. In the vast host which Xerxes led in to Greece were warriors bearing stone weapons, while the great majority were armed with bronze and a fow had advanced to the use of steel. So that to speak of the ages of stone, of bronze and of iron is as indefinite as if we should divide history into ... sges of absolut. ism if limited monarchy and republicanism.

Ài.

The dawn of history found iron in limited use. Ohinese historians say that it has been employed in their country for many thousands of years. Pliny the elder, in the early days of our own era wrote that, " as many kinds of fron as there be, none shall match in goodness the steel that cometh from the Seres, for this commodity also, as hard ware as it is, they send and sell with their soft silks and fine furs. In a second degree of goodness may be placed the Parthian iron." India has made steel of the finest quality from times

immemorial; and the method which was in use in prehistoric times is observed there to this day. A small clay crucible is made in which not more than two or three pounds of very fine soft iron are inclosed together with charcoal, and covered with leaves of a certain plant, when the whole is subjected to great heat till the iron is melted and the result is a button of very fine and pure steel which they call wootz. When Alexander defeated Porus, the latter gave the conqueror 30 pounds of this steel, which was highly prized by him. Malleable iron was also made in India in large quantities in very early times. There is in the gate of a mosque near Delhi a pillar of soft iron 60 feet high, 16 inches in diameter near the base, and es . timated to weigh 17 tons. A sansorit inscrip. tion is interpreted by some to affirm that this pillar was erected in the tenth century before our era, and by some it is understood to make its date 1400 years later. In the ruins of very ancient Indian temples wrought iron beams have been found, and metallurgists are puzzled to understand how these immense masses could have been handled and wrought by means known to have been in existence in those days. The Chalybians, a people inhabiting the southern shores of the Eurine, were famous among the ancients for their iron and steel. Herodotus speaks of them as " a people of iron workers," and from them steel was named.

Frequent mention is made of iron and steel in the Hebrew scriptures, but it is to be noted that when Solomon would build the temple, a thousand years before our era, he was obliged to send to the King of Tyre for a mon skilled to work "in gold and silver, and in brass and in iron." Chaldean inscriptions