too, have been found in the remains of pile dwellings in Switzerland. In that country the Bernese Jura abounds in remains of prehistoric iron smelting, which have been carefully investigated by Quiquerez, a scientifically trained mining official. The furnaces were in dense forests, in order to obtain an easy supply of wood. The workmen dwelt in caves, and charcoal was burned in piles. The furnaces were all similar, differing merely in size. On the natural ground, with no foundation, the hearth of fire-brick was laid. Lumps of the same material formed the walls, which were supported externally by undressed stones filled in with the earth. Two inches above the hearth a channel was left open, which had the entire width of the hearth, was arched over, and widened out at the exterior. It was made of fire-clay; the aperture consisting of several large stones which were covered with a stone slab. The shaft of the furnace was cylindrical, and inclined towards the top, so that charcoal and ore would pass down on one side, leaving the other free for the air-current. The shaft was 8 feet high, and the top was surrounded by a circle of stones. The furnaces were charged from above. The air entered at the base; no bellows being used. The opening at the base thus served as a tuyere, slag hole, and discharging hole for the blooms, which were from 30 to 50 lbs. in weight. At several of these prehistoric furnaces flint implements were found; showing that the Swiss iron industry dates back to the stone age, before bronze was introduced by foreign merchants.

In 1905 Mr. G. Arth and Mr. P. Lejeune made an investigation of a prehistoric mass of metal found near Nancy at a depth of 15 feet below the surface. The mass is 660 lbs. in weight, and was accompanied by fragments of charcoal and slag. It appears to have been the base of an ancient hearth in which the metal had been subjected to repeated and prolonged heating. The metal contains, in addition to iron, 1.21 per cent. of combined carbon, 0.04 per cent. of graphite, 1.67 per cent. of silicon, 0.026 per cent. of sulphur, 0.013 per cent. of phosphorus, and 0.18 per cent. of manganese. It is, therefore, a steel containing a higher percentage of silicon than that now usual. The slag contains 63.9 per cent. of silica. The microscopic examination showed that it belongs to Guillet's first group of silicon steels—pearlite steels consisting of a solid solution of iron silicide in iron. The low percentage of phosphorus indicates that the ore must have been obtained from the abandoned thick bed of ore, and not from the phosphoric "minette" now mined in the district.

The prehistoric cemetery at the salt-mining town of Hallstadt, in Upper Austria, has proved the most remarkable source of supply of bronze and iron implements. The number of graves opened was 993, and the number of objects found was 6084. Nowhere else has such a mixture of bronze and iron objects been found. Salt has been mined at Hallstadt since the earliest times; and modern mining operations have encountered the old workings of the prehistoric miners, and the objects found render it evident that salt mining was here carried on 900 B.C. The prehistoric mines reached depths of as much as 200 yards. Wedges of serpentine, tools of copper and bronze, numerous wooden articles, and remains of skin clothing, have been found, in good preservation. Specially noteworthy are two sacks for the transport of salt, preserved in the Vienna Museum. They are 30 inches long, and made of raw ox-hide. For carrying the sacks there is a leather strap that passed over one shoulder, and a wooden handle 15 inches long fastened by two straps to the upper part of the sack. With this handle the sack could be securely held when full; and on releasing the handle, the contents of the sack could be tipped backwards. A loop was provided for hanging up the sack. The finds at the Hallstadt cemetery have been classed by Montelius according to the swords discovered. The first period (850 to 600 B.C.) is characterised by bronze swords, and the second (600 to 400 B.C.) by iron swords. There are also transition bronze swords with iron blades.

The civilization of La Tène presents several important contrasts to that of the salt-mining community of the Austrian Tyrol. The site which has furnished a name for the second half of the early iron age (400 to 1 B.C.) has yielded an enormous number of antiquities. It lies in a small bay at the northern end of the lake of Neuchâtel; and the ancient settlement was built on piles. Among the relics from this station, exhibited in the British Museum, may be mentioned an iron brooch, an elaborated form of the modern safety-pin. The ring or collar which kept the end in position is characteristic of the locality. The La Tène swords also have characteristic scabbards; and some remarkable short swords, of this period, with bronze handles of the anthropoid type, are shown in the British Museum. They are named from the human head in the angle of the pommel. The handles are not of solid bronze, but have an iron core. In Spain iron swords of yataghan type are a peculiarity of the La Tène period. In East Yorkshire, Mr. J. R. Mortimer described, in 1905, the discovery of a sword of this period of a kind not previously found in Britain, and believes that it may date from 100 B.C.

Dr. Hjalmar Braune in 1905 published an analysis of a prehistoric iron object found at Castaneda, in Switzerland. It was the handle of a thin bronze water-jug; the iron having been protected by the bronze from rust. The iron remaining gave on analysis:—carbon, 0.14-0.18; silicon, 0.005-0.08; sulphur, 0.012; phosphorus, 0.057; nitrogen, 0.008. It contained no manganese, cobalt, nor nickel, and was evidently made from ore free from phosphorus, sulphur, and manganese—in all probability from Elba. This is borne out by the fact that bronze must have been made from a tin-bearing copper ore such as was produced at the Etruscan mines of Campiglia Marittima, on the mainland opposite Elba. An examination of a polished surface of the iron etched with dilute hydrochloric acid, shows that the metal consists chiefly of a very soft almost pure iron, with harder portions where carbon has been taken up. The oxidation has followed the lines of admixed slag. It is evident that the iron has never been in a molten condition.

In Britain development was slow. External influences did not change so rapidly as on the Continent; and consequently the Britons adhered longer to their flint weapons and implements, in the manufacture of which they attained remarkable skill. Indeed, the old flint mines at Brandon, in Somerset, are still worked for supplying gun-flints to savage tribes. In Ireland the use of stone implements was continued well into historic times. Nevertheless, Britain possessed in tin a metal that was sought after by all the world. The tin trade was monopolized by Phœnician merchants until 300 B.C. Then came the fall of Phœnicia, and the Phœnician colonies fell into the hands of the Greeks. When Cæsar invaded Britain in 54 B.C., he found the inhabitants, owing to Greek influence, not entirely uncivilized, and carrying on an active tin trade with Gaul. Iron manufacture was carried on; and Cæsar states that for currency copper or gold coins, or iron bars of given weight, were used ("*Utun-*