

Money and metals ...

We visited the Musée de Monnaie (on Museums' Night - La Nuit des Musées - in Paris); fascinating, and well worth the visit. Amongst the displays we found a room devoted to certain metals used in the foundry: among them, and of particular interest to me, tin, zinc and bronze. There was, unfortunately, but perhaps not surprisingly, no reference to 'pewter', though in France that is often difficult to tell for certain, as the French word for tin, *étain*, is the same as the word for pewter!

I reproduce, below, the wording on the panels.

TIN: WITHOUT IT, THERE WOULD BE NO BRONZE

When combined with copper, tin becomes bronze, the alloy of art and conquest.

The best-known tin ore is an oxide, cassiterite*. Occasionally used in pure form, tin remains first and foremost a major component in bronze.

Once mankind had mastered bronze in the third millennium BC, tin became crucially important, and was soon linked to the production of money.

Ductile, and mixed with copper,

tin is now mostly found in bronze and the complex alloys struck at Monnaie de Paris.

* From the Greek *kassiteros*, meaning "tin".

ZINC, TO ADD SHINE

It may look plain, but what would our medals be without the added shine of zinc?

Its late arrival in industrial history is due to the complexity of the minerals containing it.

Although zinc is not a recent discovery (alloyed with copper, it produces brass, which has been struck since Antiquity), it wasn't until 1806 that its reduction cleared the way for industrial production.

It became popular in the mentality of the monetary industry from the 20th century. Used during the Second World War, it is mostly found in the form of alloys (Florentine bronze, argentan, or nickel silver).

BRONZE, KING OF ALLOYS

Its durability and malleability made bronze one of the first alloys mastered by mankind, an essential metal for several civilisations.

Bronze owes its different

colourations (from pale pink to golden yellow) to the balance of tin and copper it contains. It symbolizes the passage from the lithic industry to metallurgy*.

Suitable for striking and smelting, the Romans became a material of choice in the history of coin and medal making: alongside gold and silver, it is the third colour used to reward victors. It remains to this day the favoured material for medals and art casting at Monnaie de Paris.

* in France, the Bronze Age lasted from -2300 to -800.

I thought that some background information might be helpful, so turned to Wikipedia. According to Wikipedia:

Bronze is a 80+% copper alloy and 90+% copper&tin alloy (commonly 12–12.5% tin) with often the addition of other metals, such as aluminium, manganese, nickel or zinc, and sometimes non-metals or

metalloids such as arsenic, phosphorus or silicon. These additions produce a range of alloys that may be harder than copper alone, or have other useful properties, such as stiffness, ductility, or machinability.

The archeological period in which bronze was the hardest metal in widespread use, [the Bronze Age, is conventionally dated in India and western Eurasia to the mid-4th millennium BC], and to the early 2nd millennium BC in China; everywhere, it gradually spread across regions. The Bronze Age was followed by the Iron Age starting from about 1300 BC and reaching most of Eurasia by about 500 BC, although bronze continued to be much more widely used than it is in modern times.

Because historical pieces were often made of brasses (copper and zinc) and bronzes with different compositions, modern museum and scholarly descriptions of older objects increasingly use the more inclusive term "copper alloy" instead.

Zinc is a chemical element with the symbol **Zn** and atomic number 30. It is a slightly brittle metal at room temperature and has a blue-silvery appearance when oxidation is removed. Zinc is the 24th most abundant element in Earth's crust and has five stable isotopes. The most common zinc ore is sphalerite (zinc blende), a zinc sulfide mineral. The largest workable lodes are in Australia, Asia, and the United States. Zinc is refined by froth flotation of the ore, roasting, and final extraction using electricity (electrowinning).

Brass, an alloy of copper and zinc in various proportions, was used as early as the third millennium BC in the Aegean, Iraq, the United Arab Emirates, Kalmykia, Turkmenistan and Georgia, and the second millennium BC in West India, Uzbekistan, Iran, Syria, Iraq, and Israel/Palestine. Zinc metal was not produced on a large scale until the 12th century in India, though it was known to the ancient Romans and Greeks. The mines of Rajasthan have given definite evidence of zinc production going back to the 6th century BC. To date, the oldest evidence of pure zinc comes from Zawar, in Rajasthan, as early as the 9th century AD when a distillation process was employed to make pure zinc.

And regular readers of *The Pewterer* will all know that pewter is an alloy of tin (90+%), antimony or bismuth, and copper)

Oh, and our visit to the Museum was concluded with a lovely supper at nearby *Le Pré aux Clercs*, in rue Bonaparte. The erstwhile haunt of Ernest Hemingway, it's fun, French, and *vaut le détour*. There is a Michelin-starred restaurant in the Museum building, Guy Savoy; but the night we visited the Museum, the restaurant was fully-booked.

Alan Williams

Musée de Monnaie, 11 Quai Conti, 75006, Paris
<https://www.monnaiedeparis.fr/>

Le Pré aux Clercs: 30 rue Bonaparte, 75006, Paris
<http://restaurant-preauxclercs.zenchef.com/>

Guy Savoy: [Phone: + 33 \(0\) 1 43 80 40 61](tel:+330143804061)

See also, for references to copper, antimony and bismuth:
The Pewterer, volumes 7.1, y, and 6.3 and 6.4 respectively.

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