

THE FITZWILLIAM MUSEUM

EDUCATION DEPARTMENT

Fact Sheet

The Ancient Egyptians Materials and Technology

Every aspect of life in ancient Egypt, as in all cultures, was affected by, and sometimes determined by, the skill of craftsmen. Boats, pyramids, textiles, weapons, every object for every purpose was hand crafted, often with tools crafted by others.



© The Fitzwilliam Museum, Cambridge. UK

Senwosret III, (Gallery 20) E.37.1930

Stone Carving

From before 3000BC Egyptians were able to produce stone vessels of great beauty. Some of the walls of these vessels were only a millimetre wide, attesting to the great skill of this craft. They worked with softer rocks such as alabaster and limestone, but also with the hardest stones such as granite and basalt. Stone workers used copper and stone picks, weighted drills with bits shaped from the hardest stones and abrasives such as quartz sand in the process of hollowing and finishing the surface of the vessels. The weighted drill was such an efficient tool that its shape was used for the hieroglyph meaning "craft". Egyptian stone carvers produced massive sculptures for the tombs, temples and palaces of the pharaohs; obelisks, colossal statuary, stelae and beautiful relief work were continuously produced.

Examples of Stone Carving

Examples of Egyptian sculpture can be seen in Gallery 20

A large carving of the hieroglyph indicating craftsmen can be seen on the large stone relief on the top shelf of Case 3 in Gallery 20. It is a pictogram of the drill bit used for making stone vessels.

Stone vessels can be seen in Gallery 20, Case 1 and in Gallery 19, Case 23

In Gallery 19, Case 15 there are a selection of unfinished calcite vessels (Label 33, Museum No: E12.1950) and calcite drill cores (Label 32, Museum No: E22.1913). There are also some examples of scribes and stone carvers practicing their craft and a limestone relief with the guiding gridlines still visible (Label 45, Museum No: E214-1936).

Metals

The development of metal technology had a profound effect on the culture of ancient Egypt, other technologies were transformed as the use of metal tools became common place.

Copper was the first metal the Egyptians used to make tools. As early as the pre-dynastic period, axe-heads, chisels, knives, daggers and many other copper implements were in use. Copper was also used to make everyday items such as jugs, rivets and bowls. These copper objects were shaped either by hammering or by casting. Hammering created the thin hard edges needed for cutting tools. Casting enabled more complex shapes to be formed, the ore was smelted in a crucible and the moulds formed from stone or clay.

Bronze alloy was discovered in Asia, and from there knowledge of it spread to Egypt. Analysis of ancient Egyptian bronze objects has shown that the metal consists of copper alloyed with 2-16% of tin. As there is no evidence of ancient tin mining in Egypt, the tin, or possibly even the ready made bronze alloy itself, was imported. Bronze was both hammered and cast. Hammering bronze increases its hardness, and bronze tools with hammered edges are particularly efficient. Bronze tools have several advantages over copper: it is stronger and harder, has a lower melting point and is easier to cast.

Gold mined in the Eastern desert, was widely used in Egypt. At one time, 10,000 ounces were mined in one year, another shipment needed 150 porters to carry it . A wide variety of techniques were used when working with gold, which included casting, hammering, embossing, soldering and wire making. Gold was used to make and decorate many types of objects from decorated weapon handles, to coffin ornaments and funerary facemasks. Gold jewellery of all sorts was set with semi precious stones such as amethyst, lapis lazuli, and turquoise.

Carpentry

Once copper tools were in use, carpentry and woodworking became more sophisticated. Pegs, dowels, mortises and tenons, dovetails and other joints were used to join lengths of wood to make cabinets, coffins and many other types of objects. Inlays were created using ivory, faience or ebony. Techniques such as veneers and layering were also used.

Examples of Tools

Wooden Cubit Rod

Gallery 19, Case 15, Label 14, Museum No: E.GA2691.1943

Basalt Ceremonial Plumb-Bob

Gallery 19, Case 15, Label 15, Museum No: E.GA,287.1949

Many types of tools were used including heavy and fine chisels, axes and saws, wooden hammers, awl and bow for drilling, and adze. The ancient Egyptians did not use planes, an adze was used instead to achieve smooth and straight surfaces.

Carpentry techniques such as joints, dowels and pegs can be seen on the exposed sections of coffins in Gallery 19, Cases 17 and 25 in the centre of the rooms.