Hands On Learning
with Reading Museum Service

READING MUSEUM SERVICE

COMMUNICATIONS H61

Cuneiform Tablet



Cuneiform script is one of the earliest known forms of written expression. Created by the Sumerians, who lived in what we now know as southern Iraq, in the late fourth millennium BC, cuneiform writing began as a system of pictographs. Over time, the pictorial representations became simplified and more abstract.

Cuneiform pictograms were drawn on clay tablets in vertical columns with a stylus made from a sharpened reed. Later people began to write from left to right in horizontal rows and a new wedge-tipped stylus was used which was pushed into the clay, producing wedge-shaped signs (the word cuneiform comes from the Latin word *cuneus*, meaning wedge).

Cuneiform writing was adopted by a number of different civilisations including the Akkadians, Babylonians, Elamites, Hittites and Assyrians to write their own languages and was widely used in Mesopotamia for about 3000 years. One of the greatest early works of imaginative literature, the *Epic of Gilgamesh*, was written on clay tablets like this one, although most surviving examples are more humdrum lists of commodities and business records. This tablet has not been translated and it is not known what language it is written in. It is said to date from the seventh century BC.

Stylus

The Romans used a variety of methods for writing. Their choice depended on where they were located (papyrus, for example, was used in Roman Egypt) or how wealthy the writer was (paper tended to be expensive). Many hundreds of small wooden tablets with ink writing have been found at Vindolanda, a small town close to Hadrian's Wall. A very common method for making short notes that could be erased later was to use small wax tablets. These were usually bound together on a leather thong or arranged to fold together like modern book covers or like an accordion. The individual tablets were made of wood and had a raised edge, forming a shallow box. Molten wax was poured into this box and allowed to cool with a smooth surface. This wax was usually a deep red or reddish brown in colour.



Reading Borough Council

Heritage Lottery Fund

A metal or bone stylus was used to write on the tablet, the pointed end to make the letters and the flattened end to smooth over writing that was no longer wanted. These folding tablets and styli were the standard writing materials for Roman schoolchildren. They went by many names. In Latin they were called cerae or codices.

Seal of Elizabeth I



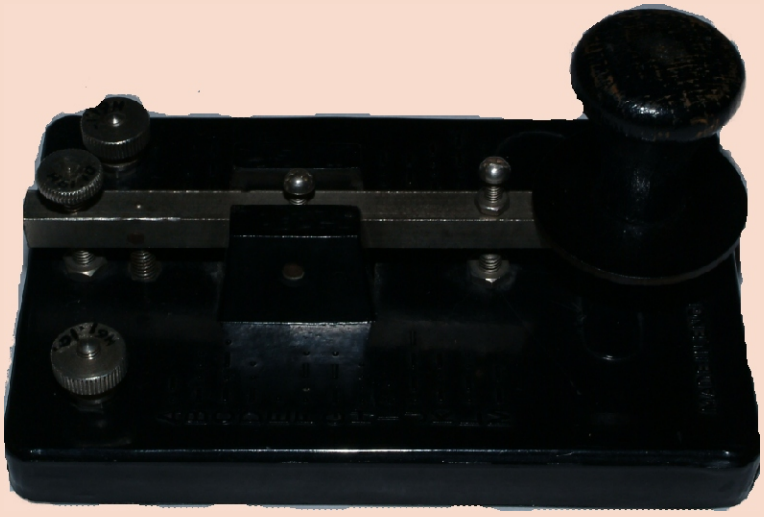
Today when we withdraw money from a bank or pay for goods at a supermarket using a plastic card we validate the transaction by typing a PIN number (Personal Identification Number) into a computer. Traditionally letters and bank cheques were authenticated by a signature. Another way of authenticating a document, which is as old as writing itself, was the seal, although this technique has long since disappeared from common use. Perhaps one day even signatures will cease to be used and PIN numbers will be all that we have left!

Seals were used in the earliest civilisations. In ancient Mesopotamia seals were engraved on cylinders, which could be rolled to create an impression on clay. In ancient Egypt seals in the form of signet-rings of kings have been found. Seals were also used across the Roman world.

In medieval England seals were widely used by statesmen, nobles, judges, churchmen and even ordinary people. Often they were made using a signet ring - a ring with an individual design engraved on it which was pressed into a blob of hot wax on a document and then allowed to harden. Sometimes seals were used to fasten a letter closed, but often they were used either in addition to, or in place of, a written signature. In this case, the wax marked with the seal was attached to the document by a cord or ribbon.

Elizabeth, in her capacity as queen, had a Great Seal made of bronze which was used on all official documents. This impression is from a ring supposedly given to Robert Devereux, 2nd Earl of Essex (1566-1601). However, it is rather large for a signet ring, so it is possible that it is from a custom-made seal. Such a seal would have been used for more personal documents. The profile image of the Queen is similar to that found on coins, although here she lacks a crown, a symbol of her authority, which reinforces the suggestion that it was for intimate correspondence. Robert Devereux, Earl of Essex, was for a long period one of the queen's favourites, although his arrogance eventually led to rebellion and his execution.

Morse Code Key



In the early nineteenth century it was realised that pulses of electricity could be used to transmit messages along a wire. In 1837 Sir Charles Wheatstone invented the first telegraph. Wheatstone's telegraph used electrical current to move a set of needles that pointed to the letters of the alphabet. The first commercial electrical telegraph ran for 13 miles from Paddington station to West Drayton and came into operation on 9 April 1839. The Great Western Telegraph, as it was called, was gradually extended and in early 1845, John Trawell was apprehended following the use of a needle telegraph message from Slough to Paddington on 1 January 1845. This is thought to be the first use of the telegraph to catch a murderer. The message was:

A murder has just been committed at Salt Hill and the suspected murderer was seen to take a first class ticket to London by the train that left Slough at 7.42pm. He is in the garb of a Kwaker (eg Quaker) with a brown great coat on which reaches his feet. He is in the last compartment of the second first-class carriage.

However at the same time Wheatstone was working on his needle telegraph Samuel Morse was developing another system which, by using pulses of electricity, needed a simpler wiring system. Also, as the message could be heard as a series of long and short buzzes (Morse code), it was, with practice, easy to assimilate the message quickly.

The key which was used to tap out the messages was a very simple affair and didn't change much over the years. This example is, in fact, a toy possibly from a set produced in the 1930s. It is smaller than one which would be used professionally and it has the Morse code embossed on its plastic base. A professional telegraphist wouldn't allow themselves to be seen using such a crib!

Piece of the First Transatlantic Cable

Early telegraph systems depended on the sender and receiver being linked by a wire. If it was impossible to run a continuous wire or if the wire was broken then a message could not be sent.

Telegraph systems soon spread across Europe. The first major undersea link, connecting England to France, was not completed until 1851, after several failed attempts. America, too, soon had an extensive network, but linking Europe and America was difficult given the presence of the Atlantic ocean between the two. The first attempt to lay a transatlantic cable took place in 1857 but the line snapped after 380 miles had been laid. Several other failed attempts followed. A fifth attempt was successful and on 5 August 1858 the two continents were joined. On 16 August communication was established with the message 'Glory to God in the highest, and on earth, peace, good will to men.' Unfortunately too high a voltage was used and within three weeks this cable was no longer working.

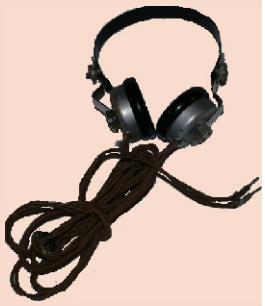
It took several years before another attempt was made. Brunel's ship, the *Great Eastern*, was used to lay the cable and on 27 July 1866 it was pulled ashore at a tiny fishing village in Newfoundland. The distance was 1686 nautical miles. The first message sent (in Morse code) on this successful cable was: 'A treaty of peace has been signed between Austria and Prussia'. Queen Victoria, then at Osborne, in the Isle of Wight, sent a message to the President of the United States: 'The Queen congratulates the President on the successful completion of an undertaking which she hopes may serve as an additional bond of Union between the United States and England.' The age of transcontinental electronic communication had begun.

The object in this box is a piece of the final, successful cable. All the cables made use of gutta-percha, a substance that came into vogue in the 1840s. It is made by boiling the sap of the Malayan gutta tree, which is similar to rubber but lacks rubber's elasticity. Malleable when heated, it hardens at room temperature but remains flexible. Although rubber worked as an insulator for brief periods and short distances, it deteriorated with longer exposure to water.



Michael Faraday, the scientist, discovered that gutta-percha did not suffer from this drawback. The first cable had three layers of gutta-percha insulation wrapped around a core of seven strands of copper wire. In all, 300 tons of gutta-percha were used for the 2,500 nautical miles of this first cable, and even more for the second. This final cable uses 10 strands of copper wire.

Earphones



The success of the transatlantic cable in reducing the time taken to communicate between Europe and America was remarkable. Yet communication through wires still had its limitations - stringing the complex web was inevitably difficult and expensive. Also cables could be damaged, either by natural disaster or, in time of war, by human activity.

Guglielmo Marconi (1874-1937) is generally credited as the father of radio communication. Marconi transmitted Morse code radio signals over a distance of over a mile on Salisbury Plain in 1896. He worked on his equipment, gradually extending the distance he could transmit and he sent the first transatlantic radio signal on 12 December 1901, Marconi and his assistants heard the faint transmission from across the Atlantic: dot, dot, dot; the letter S in Morse code. However in recent years some have questioned this, believing he heard only atmospheric noise, as such a transmission would not be possible even today, at the time of day it is supposed to have taken place. Whatever the case, by 1903 the Marconi company was carrying out regular transatlantic transmissions and they had a fully reliable service by 1907.

These headphones are from a crystal radio set. Crystal sets were the earliest form of radio receiver. They were easy to make consisting, at their simplest, of a long-wire antenna, a loop of wire and a semiconductive mineral crystal fixed inside a brass cup. They did not require any power. The listener had to find the loudest signal by touching a wire, called a cat's whisker, to various points on the surface of the crystal. Headphones were needed to hear the broadcasts, so only one person could listen at a time.

The BBC was created by the British government to avoid the chaotic radio free-for-all in America. It began transmitting on 14 November 1922. This was followed the next day by broadcasts from Birmingham and Manchester, and over the following months the transmitter network spread across the UK. Wireless quickly caught on as a medium of mass communication. By 1925 the BBC could be heard throughout most of the UK.

Hands On Learning
with Reading Museum Service

COMMUNICATIONS H61

Fibre Optic Cable



The transatlantic cable of 1866 was made of copper. For over a hundred years metal wire of one kind or another, through which electricity could be conducted, remained the standard material for telephone transmissions. However, in the 1960s experiments began using glass fibres to carry pulses of light as a way of transmitting information. Initially the transmission distances were very short, but as manufacturing techniques for very pure glass arrived in 1970, it became feasible to use optical fibres as a practical transmission medium. By 1980 world wide installation of fibre optic communication systems had been achieved.

Optical fibres are light, thin and can carry signals with much less energy loss than copper cable and with a much higher bandwidth. This means that fibres can carry more channels of information over longer distances than traditional wire cables. It also means that much less space is required in underground cabling ducts and they are easier for installation engineers to handle. The difference between the two kinds of wire is illustrated in the two cables in this box. The thin optical fibre can carry the same number of telephone calls as the bulky cable with its 300 aluminium wires.

Five Victorian Cards



Although electronic media are increasingly used for communication, written messages on paper have been the primary form of communication for hundreds of years and are likely to remain important, if not quite as dominant as they once were.

Greetings cards are as popular today as they were a hundred years ago. These examples date from the late-Victorian era. The 'Mizpah' card is part of a wider genre of sentimental brooches and mementoes. The word can be found in the book of Genesis. A man called Laban makes an alliance with Jacob and builds a cairn to commemorate the event:

> Laban said, "This heap is a witness between you and me today." That is why it was called Galeed. It was also called Mizpah, because he said, "May the LORD keep watch between you and me when we are away from each other"

Hands On Learning
with Reading Museum Service

COMMUNICATIONS H61

Jubilee Telephone

In 1935 Sir Giles Gilbert Scott was commissioned by the GPO to mark the Silver Jubilee of King George V by designing a new telephone box. The result was the K6, or Jubilee kiosk, which until very recently was the standard UK kiosk design and could be seen all over the country particularly as they were painted bright red!

In 1977 the GPO decided to commission a new telephone design, but in this case the result was less successful in fact, it was a commercial failure. Until then, the GPO had collaborated with a cartel of manufacturers in the design of their telephones. But for this exercise, a team was set up to design a new telephone which would be made in house at Cwmcarn, the GPO renovation factory in South Wales. The design brief was that the phone should fit on a narrow shelf, such as a windowsill in a hallway or kitchen. This presented problems to the team. The telephone would be too small to accommodate a bell set, so an external one had to be made - though the external bell is missing from this example. As a telephone without the bell mechanism inside to weigh it down is liable to move when dialling a special low inertia dial then had to be developed. In 1977 a limited production run of the type 4271 Queens' Silver Jubilee Telephone was set in motion. It was made in Balmoral Blue, (Royal Blue) and had the distinctive dial centre shown above. Some were issued as gifts by the GPO and others were rented or sold to the public.

Unfortunately, the public did not readily take to them. The rounded design with a dial, not push buttons, looked old fashioned and dated. The separate bell set seemed a retrograde step. The concept was flawed, in that few people by then were using the telephone in the entrance hall, and kitchen telephones were usually wall mounted.

Donated from the BT Connected Earth collection, see www.connected-earth.com



Hands On Learning
with Reading Museum Service

COMMUNICATIONS H61

Two Newspapers

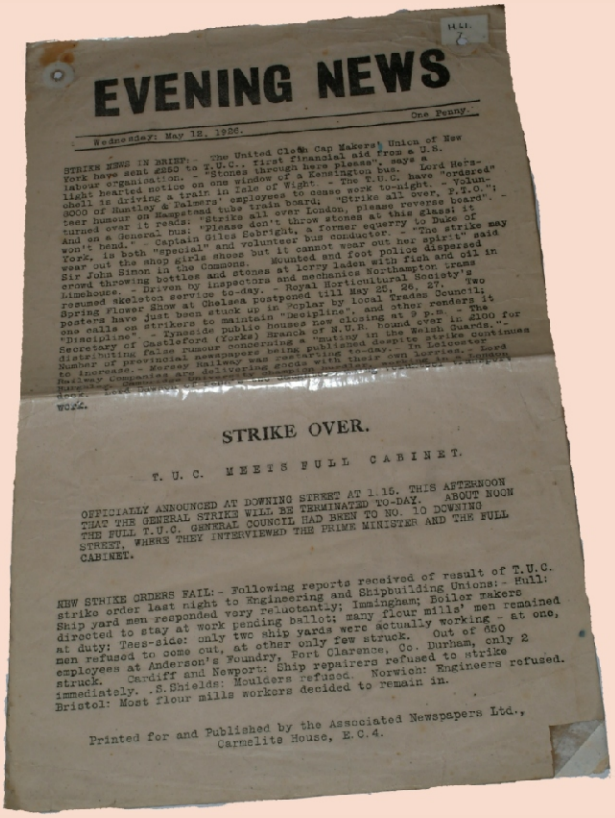
Newspapers are another form of written communication which have remained popular, despite the advent of the internet.

The *Daily Sketch*, founded in 1909, was Britain's first tabloid newspaper. It made much use of photographs and, as with today's tabloids, much of its coverage was devoted to the activities of the rich and famous. It ceased publication in 1971 and, in effect, merged with the *Daily Mail*.


DAILY SKETCH

FLOCK OF AVIATORS MIGRATE FROM THE CONTINENT.

The copy of the *Evening News*, a popular London tabloid (closed 1987), is an emergency edition published during the General Strike of 1926. One of the news items is that 'The T.U.C. have "ordered" 8000 of Huntley & Palmers' employees to cease work tonight'. However, in the end the Reading workers did not need to come out on strike, as item at the bottom of the page indicates, because the strike was called off. 1926 was celebrated as Huntley & Palmers centenary year and the strike did prevent a visit by the Prince of Wales's visit to join a celebratory banquet in Reading.


EVENING NEWS

One Penny.

Wednesday, May 12, 1926.

STRIKE OVER.

T. U. C. MEETS FULL CABINET.

OFFICIALLY ANNOUNCED AT DOWNING STREET AT 1.15. THIS AFTERNOON THAT THE GENERAL STRIKE WILL BE TERMINATED TO-DAY. ABOUT NOON THE FULL T.U.C. GENERAL COUNCIL HAD BEEN TO NO. 10 DOWNING STREET, WHERE THEY INTERVIEWED THE PRIME MINISTER AND THE FULL CABINET.

NEW STRIKE ORDERS FAIL:- Following reports received of result of T.U.C. strike order last night to Engineering and Shipbuilding Unions:- Hull: Ship yard men responded very reluctantly; Immingham; Boiler makers directed to stay at work pending ballot; many flour mills' men remained at duty; Tees-side: only two ship yards were actually working - at one, men refused to come out, at other only few struck. Out of 650 employees at Anderson's Foundry, Port Clarence, Co. Durham, only 2 struck. Cardiff and Newport: Ship repairers refused to strike immediately. S.Shields: Moulders refused. Norwich: Engineers refused. Bristol: Most flour mills workers decided to remain in.

Printed for and Published by the Associated Newspapers Ltd., Carmelite House, E.C.4.