

# PAPER PAST AND PRESENT

## Introduction

Paper is a product made from the broken-down fibres of a plant material woven in a random pattern. The word 'paper' is etymologically derived from the word 'papyrus' in many European languages, because medieval Europeans thought paper was derived from papyrus. This was incorrect but indicates the use of paper as one of a long line of writing materials stretching back to the earliest written records around 3,000 BC. The invention of paper by the Chinese 2,000 years ago produced the ideal material for writing or printing, being cheap, light, pliable and durable, and it has been in demand ever since.

For hundreds of years paper was primarily a writing material; only when it became cheap and plentiful as a result of the Industrial Revolution did it start having other uses. Today we see paper products everywhere. Whilst it is possible the growing popularity of electronic communication may lessen paper's use as a material for the written word, it is more than compensated for by ever-increasing demand for paper and card in other areas, such as as packaging to supply the online ordering and delivery market. This is a product which will remain in demand.

Fonts used: thematic information in plain text, philatelic information in italics.

## Key references

- Hunter, D. (1947) *Papermaking: the history and technique of an ancient craft*  
 Kurlansky, M. (2016) *Paper: paging through history*  
 Monro, A. (2014) *The Paper Trail: an unexpected history of the world's greatest invention*  
 Sansom, S. (2012) *Paper: an elegy*

## Articles published by the exhibitor

- Paper Trail *Stamp Magazine* vol. 78 no. 6 June 2012  
 Watermarks: a philatelic primer *Philateli-Graphics* vol. 34 no. 4 Oct. 2012  
 John Dickinson and his Silk Thread Paper *Topical Time* vol. 67, No. 3, May-June 2016  
 Paper and the Post Office *The Quarterly: Journal of the British Association of Paper Historians* nos. 107 - 108, July - October 2018

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Berlin Paper Trade Fair 1913

This display is mounted on a non-standard size Canford 150 gsm, 210 micron paper, made from acid-free pulp supplied by St. Cuthbert's Paper Mill, Wells, Somerset

## 1. Before the invention of paper

### 1.1 Man's ingenuity led him to use minerals

Wet clay, the most common raw material in the Near East, was used for the first codified system of writing: cuneiform. It was widely used from around 3,300 BCE.



Wet clay was impressed with a reed stylus. It was easy to mark, and relatively easy to erase



It was then either dried in the sun or baked in a kiln, leaving a more permanent record



Pieces of broken pottery could be re-used by painting on the shards of clay; known as ostraca.



Cyrus Cylinder, 6th century BCE



Ugarit, 1230 BCE

Stone could be scratched or painted, and thus has an ancient history, but a more sophisticated use required specialist tools.



Tombstone Handstamp A PAID 2 AUG 1833  
 1833 London to Woolwich. Boxed "P.P. 2 Rate" and "BF NOON" receiving mark

Because it is nearly indestructible stone has always been a favoured medium for official pronouncements. An example from 196 BCE is the decree of Ptolemy V, now known as the Rosetta Stone.



Today granite is used for tombstones.



Originally called Woodville, the Post Office adopted the name Granite Quarry in 1905, named after the stone quarried there.  
 3c domestic first class surface letter rate

Clay

Stone

### 1.1 Man's ingenuity led him to use minerals

Like stone, metals require tools and a degree of technical knowledge.



Salt cellar by Benvenuto Cellini  
Euro-rate miniature sheet printed with gold leaf



Bronze tablet



Copper has the earliest known use: around 2,800 BCE.



Iron scroll, Ming Dynasty

Precious metals were, and still are, used to stress the value of an item, or to demonstrate the wealth of the owner



GB Greetings Telegram envelopes were made from gold coated brown paper, overprinted with a design in red and blue. Various printings in the 1930's resulted in variations of colour from yellow-gold to a coppery gold. This example dates from 1939.

### Metal



100g special delivery rate, mounted on security backing paper, De La Rue printing.



Decorative border embossing  
Silver



22 carat Gold

### 1.2 Vegetable fibres

Cheap, readily available, and easy to prepare and write on, wood has been used world-wide since at least 3,000BC. Wood could be left in its natural state or treated by polishing, varnishing or lacquering.

### Wood



Divination written on wood c.100AD



Lacquered wood, 12th century



Commemoration of Battle of Trafalgar  
Hull, mast and spars overprinted by thermographic process using real wood from H.M.S. Victory. Wood is finely ground, applied to the stamp as powder and then heated.



Veneer made from sustainable wood

### Bark

Bark needs a minimal amount of processing to produce a smooth pliable material. It has been used since before the Christian era in countries where wood is plentiful.



Various tropical countries used tapa, made by beating bark very thin. It can be made from mulberry, fig or breadfruit bark. More usually used for artefacts or clothing, historically it was also a writing material

Tonga postal stationery 1909. Nuku'alofa, via Suva (Fiji) to Canada 26 June 1909.

One of a set of 10 different issued in 1906.



Cork is harvested about every nine years. The bark is stripped from the mature cork oak tree; a process that does not cause damage to the tree



Envelope and letter-sheet made from birch bark Sweden T.P.O. PLK.317.A 28th July 1912 to USA



### 1.2 Vegetable fibres

Known from at least 3,000 BCE, papyrus was a state monopoly of first Egypt and later Rome and Byzantium. While various cultures used plants, only papyrus became a commercial product traded throughout the known world.

### Papyrus



The papyrus plant



Papyrus was made from the inner layers of the papyrus plant, a kind of giant swamp grass. They were unrolled and laid out in sheets then moistened, pressed or hammered together with weights. When dry, they were rubbed with stone, ivory or shell to get them smooth.



3.00



Ebers papyrus, c. 1550 BCE



The issued stamp

Papyrus plants to the left of the scribe  
Monochrome proof signed by the designer C. Galeron

### 1.3 Animal skins

These became the standard writing material in Europe from the 2nd century AD until the Middle Ages.

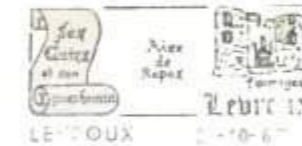
### Parchment and vellum



City of Bergama



When the Egyptians stopped exporting papyrus the citizens of the Greek city of Pergamon developed a new writing material made from calfskin, called 'pergamina' after the city. 'Parchment' is a corruption of Pergamina. Pergamon today is part Turkey and known by its Turkish name Bergama



Levroux has been a centre for leather and parchment production since the middle ages. Today it has a Museum, the "Musée du Cuir et du Parchemin"



Treated properly, animal skins, primarily parchment and vellum, are a very durable and flexible material. True parchment is made from sheepskin or goatskin and vellum from calfskin, although in general terminology all writing skins are referred to as parchments

The raw material: goatskin.  
Photo proof from the printer's archive. About 5-10 printed as a test print prior to full print run. Back has official Korea Post stamp



Calfskin



Pergamino was named in 1626 after a Spanish document relating to its founding  
27 May 1941 to Canada  
Opened and resealed by Canadian censor

But animal skins were expensive; papyrus was controlled by a state monopoly; something else was needed ...

2. A great invention  
2.1 Invented by the Chinese

It is not known when paper was first made, but archaeological excavations in north-west China, where arid conditions aided preservation, have produced scraps of paper dating back to the second century BCE.



Cai Lun and his invention  
Chromalin proof mounted on card, plus issued stamp

By tradition the Chinese credit Cai Lun (Ts'ai Lun in alternative transliterations) with the invention of paper whilst working at the court of the Han Emperor He. Under He's successor the Empress Deng he organised experiments in making paper in order to reorganise the keeping of imperial records, and documented these around 105 CE.



Early Chinese paper



Early paper, which the Chinese celebrate as one of the "Four Great Inventions"  
China postal stationery card 2000



The Chinese word for paper is zhi, the word being first documented on bamboo texts found in a tomb at Shuihudi Qin dated to 217 BCE.

纸 The character zhi features in this cancel of the place name "Green Paper"  
China postal stationery lottery card 1998



Manufacturing paper at the Chinese Imperial Court

2.2 As knowledge spread, paper mills were built

The Chinese held this monopoly for about 500 years before it spread to Japan and Korea. By 751 CE it had reached Samarkand, on the Silk Route to the West. Eventually the knowledge spread through Persia, Arabia, the southern Mediterranean, and eventually by the 11th century to Europe.



Samarkand was the first paper manufacturing centre outside eastern Asia. Arabs in Central Asia learnt the skill from the Chinese and switched from parchment and papyrus to paper.

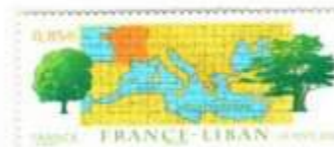


The oldest surviving manuscript written on Arab paper (now in the Vatican Library) was probably copied at Damascus in about 800



By 900 CE Cairo had become a centre.

Fez in Morocco became a centre by 11th century, and from here the knowledge was exported to the Mediterranean coast of Spain



Tracing the route from North Africa to Europe



Official 1944 Christmas Airgraph addressed to the UK from a soldier of the 'Central Mediterranean Forces' operational in Libya. Partial crowned shield PASSED BY/ CENSOR.



Monochrome die proof signed by the engraver Pierre Gandon. Blank value tablet. Design issued in values of 5f, 8f and 10f



2.2 As knowledge spread, paper mills were built

In Europe, papermaking started first in Sicily (brought there by the Muslims of North Africa) and then the mainland. The earliest documented site is Fabriano, next to the Giano River, known from a document dated 1264. It was adapted from existing local felting mills.

Italy



Paper museum in Fabriano, formerly a monastery



Pietro Miliani



Pietro Miliani paper mill  
Fabriano to San Severo 08 August 1919, with perfin P M

By the fourteenth century Fabriano had at least 40 paper mills. In 1785 a mill was founded at Fabriano by Pietro Miliani.

2.2 As knowledge spread, paper mills were built

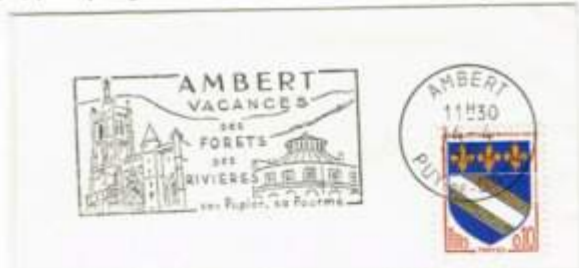
Paper rapidly became a commodity in demand. Italy exported its paper across Europe, prompting businessmen in countries including France to invest in mills locally.

France

Paper was being made in the Auvergne region of France by the 1340s. The paper museum Richard de Bas is the last functioning paper mill in the Auvergne; first built in the 14th century it now produces about 200 sheets a day



AMBERT 25-8-95



Ambert in the Auvergne supplied paper for the first edition of Diderot's Encyclopédie

Perhaps the most famous French papermakers - though for another reason - were the Montgolfier Brothers, Joseph and Etienne. They were born into a family of owners of a paper mill in Annonay, in the Auvergne. They lined their first trial balloon with three layers of thin paper underneath sackcloth



Pierre de Beaumarchais purchased three paper mills in the 1780s



The Subiaco paper mill was in continuous existence from 1587 to 1994

Postmark: CARMIGNANO BRENTA-CARTIERA (PADOVA) 18.1.16  
i.e. Paper Mill of Carmignano Brenta  
Founded as Lanaro G. & Co. in Carmignano di Brenta.



6 September 1879 Annonay to Lyon  
with Montgolfier Freres Annonay merchant mark

Annonay is still known for its leather, paper, textiles and coaches, and the Papeteries Canson & Montgolfier SA is still based there, now specialising in fine art and photographic papers



When Etienne died his son-in-law, Barthélémy Barou de la Lombardière de Canson succeeded him as head of the company. The company became "Montgolfier et Canson" in 1801, then "Canson-Montgolfier" in 1807.



2.2 As knowledge spread, paper mills were built

The next European country to introduce papermaking was Germany. Its first mill was built in 1390 by Ulman Stromer outside the gates of Nuremberg; he employed Italian paper makers brothers Marco and Francisco di Marchia. The economic imperative for locating it in Nuremberg was because at that time the city was the largest printing centre in Germany.

Germany



The Kieppemühle, which from 1885 was owned by Poensgen & Co, first started as a paper mill in 1670  
Perfin P C (reversed)



One of Nuremberg's biggest presses was run by Anton Koberger. His Nuremberg Chronicle contained 654 woodcuts, including the Stromer paper mill, the first depiction of a paper mill in a European book, the basis of the design for this cancel



The town of Papiermühle was named after its local industry (pmk 04 June 1906)  
Merchant mark for Sommerfrische Papiermühle, situated in Stadtroda



The invention of printing by Gutenberg in the 1450s soon resulted in an increased demand for paper. Gutenberg printed 45 copies of his great Bible on vellum, and 135 copies on paper



A testament to the demand for books, and hence paper, is the Frankfurt Book Fair, which has been held annually almost continuously since 1454

Switzerland

2.2 As knowledge spread, paper mills were built

The requirements for a suitable site for a mill were a river with a swift downhill run, clean water with low iron content, and a nearby population that could provide rags; all conditions easily fulfilled by Switzerland which started its own production in 1411



Dalat, Annam (Indo-China) 03 June 1922 to Bern, annotated 'Papiermühle', that crossed out and readdressed to Balingen, Wurtemberg.  
With Papiermühle Bei Bern receipt 05 July 1922



500th anniversary of printing in Geneva

John Calvin established his ministry in Geneva in 1541. Protestant printing turned Geneva into a major publishing centre, which itself created a huge demand for paper.

Named after its main product, Papiermühle was a village in the Canton of Bern. Now part of the municipality of Ittigen it retains its name only as a transport hub.  
The first paper mill there started in 1466.



Papiermühle

19 January 1940

Postal telegram to Zürich with telegraph code

Zürcher Papierfabrik was founded in 1863. It is situated on Papierwerd, an island in the River Limmat in Zurich. The first paper mill on this site has been dated to 1471.  
Privately printed postal stationery 20.10.17

2.2 As knowledge spread, paper mills were built

The first documented mention of Dutch-made paper is 1586. Its canal network was ideal for transportation of the product to towns. Scandinavia has always had a ready supply of softwoods, used as the raw material from the nineteenth century.

Low Countries and Scandinavia



150th anniversary of the Tervakoski Paper Mill in Finland, founded in 1818, and later used to manufacture postal stationery. Part of the current Tervakoski output is still handmade paper.

10 kopek red postal stationery envelope manufactured by the Tervakoski paper mill. With watermark TERVAKOSKI



Viborg to Helsingfors 8 March 1862  
Inland letter rate 10k  
Rate valid 1 January 1844 - 31 December 1874  
With black boxed receiving mark



Munkedal, Sweden, was founded by monks in the mediaeval period. Both town and paper mill were named after them



Heelsum, Netherlands, where eight paper mills had been established by 1736. The last mill producing paper by hand was mechanised in 1895



Design for the observatory plus print works and paper mill built by Tycho Brahe on the Danish island of Ven around 1576.



19th century lithograph of Tampere shows the Frenkell paper mill to the left.



In the background of Kotka Harbour is the Sunila mill.



Pannekoek & Co. grew out of the Nicholas Pannekoek paper mill founded at Heelsum in 1709. It was renamed Royal Paper Mill in 1904

2.2 As knowledge spread, paper mills were built

Paper started to be used in England from the early 14th century, imported from France and the Low Countries. The first reference to a paper mill in the United Kingdom was in a book printed about 1495. In the next 80 years the price of paper rose 30 - 60%, but parchment rose 70%, making paper the more economic product.

United Kingdom



EXAMINER 4352

High Wycombe became a major paper making centre from the 17th century, using water power from the River Wye (Buckinghamshire), whose waters were rich in chalk, and therefore ideal for bleaching pulp.

Perfin C M for Charles Morgan & Co. Ltd.  
Censored High Wycombe to USA 11 Nov 1941.  
USA airmail rate zone 3



Alexander Cowan & Sons founded a paper mill at Penicuik, Midlothian.

The first issue of the Virgin Islands, 1866 (rose-red, toned paper), was printed in part showing the paper maker's watermark. This stamp shows part of the monogram A C S

Spicers original mill was in Alton, Hampshire. It was taken over by John Edward Spicer in 1796 to become what is now a multi-national company.

Spicers perfin (S L) on 2d stamp  
2 1/2 letter rate to 2 oz. Rate valid 01 May 1940 - 30 Sept 1957  
Festival of Britain cancel on Festival Illustrated envelope



Woodhall Spa Mill was part of Lincolnshire's paper industry, based around Tealby, from the late 18th century  
Mill Lane rubber cancel

SPICERS THE PAPER PEOPLE Cover back flap

**2.2 As knowledge spread, paper mills were built**

The first paper mill in North America was established in 1690 by William Rittenhouse at Pennsylvania, which became a major papermaking region. Rittenhouse was apprenticed as a papermaker in Germany before working as a papermaker in Holland. He emigrated to Pennsylvania in 1688.



Now known as Alstead, Paper Mill Village was the location of New Hampshire's second paper mill, established in 1793. Paper Mill Village operated as Designated Post Office from 1825 to 1866: 13 January 1852. With **PAID 3** in circle: rate of 3 cents per half ounce for distance of up to 3,000 miles. Rate valid 1 July 1851 - 30 June 1863



Cancel in use 11/02/1884 - 30/11/1895  
1 cent domestic postcard rate

Cancel in use 01/12/1895 - 30/11/1905  
Postal stationery 2 cent domestic letter rate  
Rate valid 12 May 1873 - 1 November 1917

**United States of America**



Horace Augustus Moses founded the Mittineague Paper Company in West Springfield, Massachusetts, in 1892

T & H, originally Tileston and Hollingsworth, were founded in 1804 at Milton, Massachusetts. Their meter mark shows the the mould being dipped into the vat



Benjamin Franklin, also shown on the postal stationery below, is credited with starting/financing 18 mills in Pennsylvania.

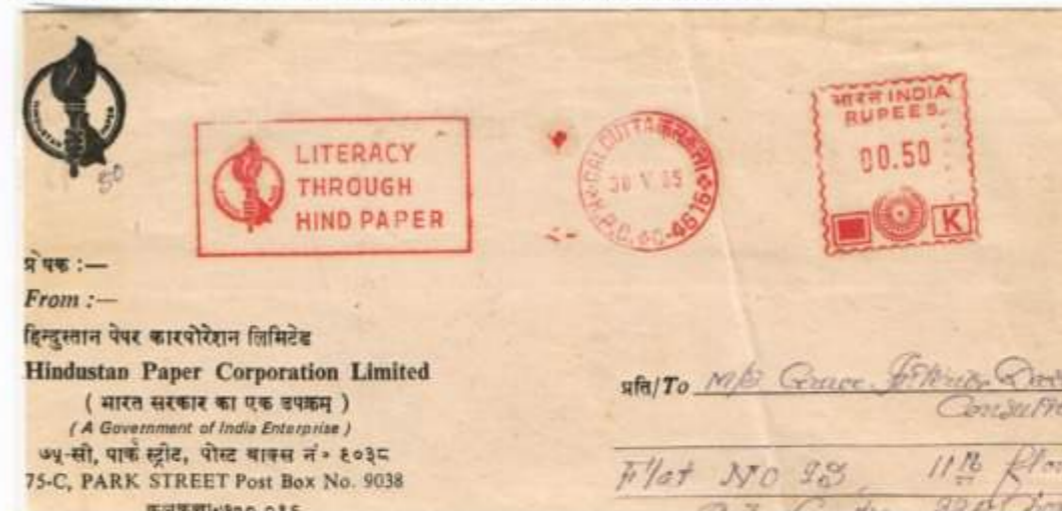
Warren Paper Mills, New Jersey. The town name was later changed to Warren Glen. Designated Post Office 1884 - 1909



**2.3 Raw materials depended on local supplies**

Paper is made from broken-down cellulose fibres, so many different plants have been used. Makers used whatever was plentiful in their area. The earliest Chinese paper was made from silk rags, mulberry and later bamboo.

**Asia and the Far East**



Hindustan Paper Corporation has four mills in India, making writing and printing paper and newsprint. All use bamboo as their raw material.



Indore, 1889.  
Made from mulberry leaf paper

Silk worm feeding on mulberry leaves



Miniature sheet printed on silk



Cutting bamboo    Cooking it

Bamboo was used from around 1,000 AD. Fresh-cut stalks of young green bamboo shoots were cut into tubes, split open into a strip, the outer green skin scraped off and bound together with other strips.



Roller cancel for Mulberry, Kansas, 22 November 1902  
Domestic first class letter rate 1885 - 1917



2.3 Raw materials depended on local supplies

In Africa, different plants were used. In Madagascar paper is still made today in the traditional way, using pulp made from the bark of the avoha tree. It is known as Antaimoro paper from the ethnic group in Madagascar who make it, in centres including Ambalavao.

Africa



наиманше  
св.  
марку  
наш. 60ФНТ  
Киев!



Mettre: -"Republikan'i Madagasikara" au lieu de "Republika'i Madagasikara"  
- "Paositra 1993" au lieu de "Poste aeriennne"  
- "Antaimoro" au lieu de "Antaimore"

Le Directeur des Prestations  
Financières Postales

BOTO Ferdinand

Photographic proof used as the final design. Mounted on posterboard with acetate window for lettering. Plus photographic proof of final design, showing changes of spelling listed on the pasted-in slip. Signed by the Director of Postal Financial Services

2.3 Raw materials depended on local supplies

The first choice of European paper makers, and those who took the knowledge to the USA, was linen, which they obtained by buying old rags which they ground down to fibres. The fibres of the flax plant, from which linen is made, gave particular strength to the pulp.

Europe and North America



Special security linen rag paper  
De La Rue printer's trial, plus issued stamp

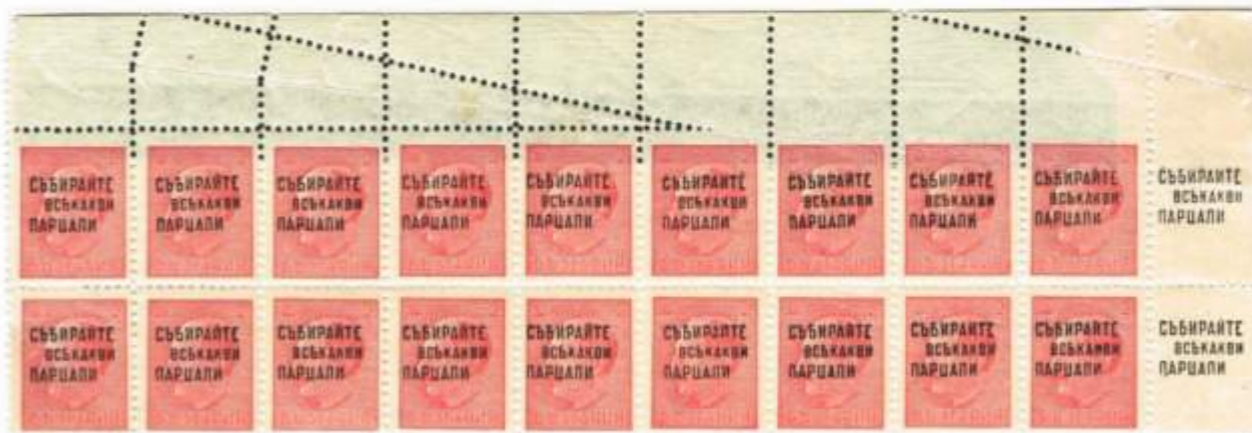


Back flap  
W. S. COWELL, LTD.,  
MARKET LANE,  
IPSWICH.

W. S. Cowell started a printing and stationery business in 1818. In 1885 they added a "rag business" to the company to provide the raw material for their output.  
Perfin W S C



Pure linen is a tough material, sturdy enough for parcel tags  
Peterborough to London. Peterborough duplex 612. Postage underpaid with ms 2 plus boxed "More to pay / above 2oz / 612" = Peterborough charge mark



1945 overprint "Collect all rags"  
Overprint extended to margin plus mis-placed perforation  
This wartime plea for raw materials was nothing new;  
in 1799 a Massachusetts paper mill produced a paper with the watermark "Save rags".

### 2.3 Raw materials depended on local supplies

Cotton supplies became widely available with the expansion of the cotton textile industry after 1780. Cotton fibres gave paper an opaqueness and softness which was particularly valued for making copperplate prints. Lime could be added to cotton pulp for whitening.



Postmark for Cotton Town, Tennessee 20 November 1901  
(Now called Cottontown)  
Domestic first class letter rate 1885 - 1917

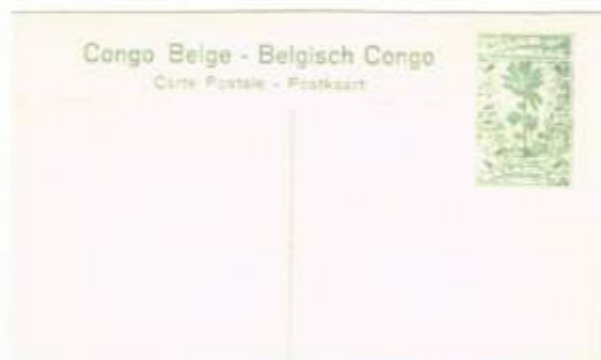


Cotton fibres contain about 91% cellulose, making it the purest form of cellulose available to the papermaker. Today it is coming back in use, being superior in both strength and durability to cheaper wood-pulp paper.



The papermill in Velké Losiny, founded in the 1590s, is today a working museum which still makes handmade paper from cotton and linen.

### Europe and North America



Belgian Minister for the Colonies examining cotton production in the Belgian Congo  
Number 114 of a set of 50 different postal stationery cards (numbered 73 - 122) published in 1922

### 2.3 Raw materials depended on local supplies

Linen or cotton were ideal, but by the late eighteenth century demand for rags was outstripping demand. Supply problems, and the rising cost of rags, led to experiments with other raw materials.



**Jute**  
Originally obtained from used sacking. It contains about 60% cellulose and with the increasing demand on wood pulp jute is coming back into use as a raw material for paper.

Bilingual cancel: Jutezentrum - Centre de Jute



**Hemp**  
First used in Japan in the eight century. In 1716 a treatise on papermaking published in London advocated the use of hemp. However its brown colour makes it difficult to bleach.

Rope could be unpicked to get the hemp

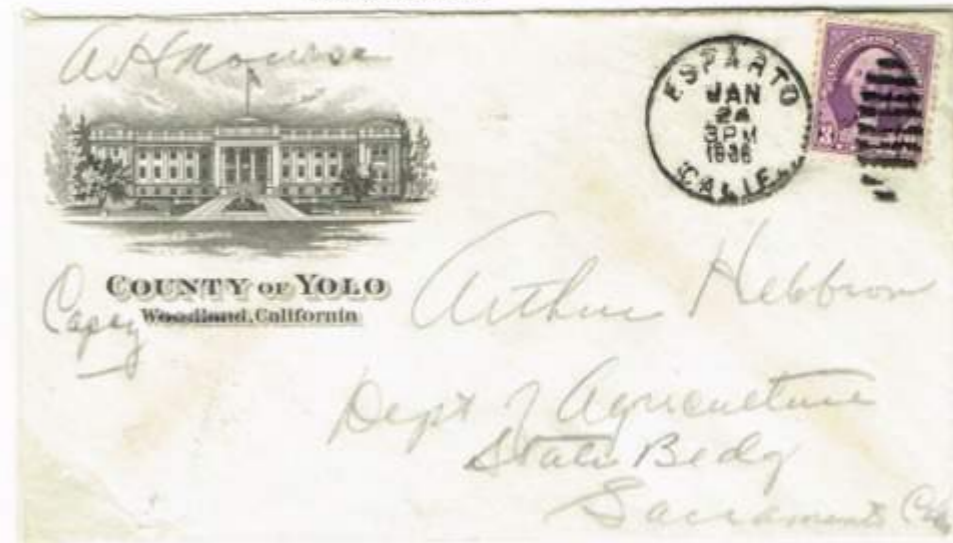


Entire addressed to Balerno Paper Mill, Edinburgh  
Endorsed: "2 mats & 10 bundles rope"  
Posted at Leith, stamped with Penny Post charge to Edinburgh, further stamped 2d at Edinburgh Head Office with Leith Penny Post 22 AUG 1836



In 1836 the Newspaper Tax was reduced to 1d, paying the tax charge and allowing the newspaper to pass free through the post.

**Esparto**  
Imported from North Africa, it was first used to make paper in England in 1857. Among other things its paper was used for the 'Illustrated London News'.



## 2.4 The basic process was the same

Irrespective of where paper was made, or what it was made from, the process of its manufacture remained the same. Equipment consisted of a beater to macerate the fibrous raw materials; the vat where fibres were mixed with water; the mould; drying felts; and the the press.



The vatman dipped the mould into the vat holding the fibre suspension and lifted out some of the mixture, giving it a shake. As the water drained off a layer of fibres was left. This wet sheet of paper was tipped out on to a felt. A pile of alternate papers and felts was squeezed in a screw press then hung out to dry



四国の伝統工芸シリーズ  
 〈土佐和紙〉高知県  
 平安時代の文献にも登場している土佐和紙。精巧で円熟した技法は、厚さが高く、清紙紙・土佐真紙紙は国指定の無形文化財となっている。

Dipping and lifting the mould  
 Japan postal stationery card



Postal stationery card commemorating 500 years of papermaking in the Czech Republic, or Bohemia as it would have been in 1499. The illustration on the card is taken from "Das Ständebuch" (The Book of Trades), a 1568 work with woodcuts by Jost Amman

## 2.5 The mould dictated the type of paper

The mould, which is dipped into the pulp, is a metal wire mesh fixed to a solid frame. Early moulds were made of thin wires along the longer length of the mould, interwoven with heavy wires running across: the 'laid' wires. In 1759 James Whatman first used a mould with a fine wire mesh, making a much smoother paper known as wove.

### Vertical laid paper

In stamps 'vertical' or 'horizontal' laid refers to the direction of the lines in relation to the design of the stamp. 13 vertical lines per 20 mm, 1 horizontal line per 24 mm



Benjamin Franklin promoted wove paper at an exhibition in Paris in 1777  
 31 Mar 1854 Charleston to Vermont. 3c first class domestic letter rate.



The appearance of the edge of each sheet is also due to the mould.

The wooden frame was called a deckle. Some of the paper slurry passed under the deckle forming an irregular, thin edge, as illustrated by GB line -engraved issues printed on hand-made paper made at Rush Mills, Hardingstone. 1871 1d rose-red Pl 146. Right hand marginal block with inscription and part ornament Type D



Wove paper  
 Die proof printed on handmade wove paper impressed with Atelier du Timbre. Signed by the engraver Bequet



**2.6 Watermarks were an early addition**

Early watermarks were made by weaving a design made from metal threads into the wires of the mould. It is not known exactly what their original use was, but they soon came to be used as paper manufacturer trademarks.



The Fabriano paper mills, first documented in 1276, were the first to introduce watermarks. Shown here is the paper museum at Fabriano, housed in the former Monastery of St. Benedict.



The 'mercury and bird' watermark of the Thomasböle Mill, founded in 1667. This watermark was used from 1672.



Left hand side of stamp shows three sixteenth century watermarks from Hungarian documents.



Julius Glatz founded a paper mill at Neidenfels in 1885 and adopted the complicated logo and watermark of a bearded head with wings.



Early watermark from the Diósgyöri paper mill in Hungary, founded in 1782.



Early Spanish watermark on a Dominican Republic official document.

American Papermaking 1890-1990  
Rittenhouse paper mill circa 1770.

This watermark appears on the first paper made in the United States on this site in 1790.

Rittenhouse was the first paper mill in British North America. Its watermark is illustrated on the left of the card. (The card incorrectly claims that this watermark appeared on the first paper made in the USA; in fact it was Rittenhouse's second watermark, introduced in 1704).

**2.6 Watermarks were an early addition**

A more recent use for watermarks is as a security feature, as used in stamps and postal stationery. Stamp watermarks are made by wire patterns on the dandy roll: a light roller which is impressed on the continuous web of paper to aid draining the water from the stock.



Watermarks used on Danish stamps



'Large garter' watermarked paper used by De La Rue for Queen Victoria 4d issue of 1857



Swedish Crown watermark



Edward VII 1902 Imperial Crown watermark  
Marginal block with part portrait offset on reverse



Simple cypher Missing crown Missing tail to R

George V simple cypher watermark. Paper was made at the William Joynton paper mill in Kent

		Missing crown	
	Missing tail to R	Missing tail to R	
		Missing crown	

The mesh of the dandy roll occasionally got damaged, resulting in faulty watermarks. This block shows two examples each of two different errors



Paper has a side intended for printing and watermarks are usually impressed so that they read normally when looked through from the printed side. This is illustrated by this block with POSTAGE watermark in the top margin (plus Imperial Crown in each stamp).