

# THE HISTORY OF PRINTING

Secondary School Workbook – Junior Cycle



NATIONAL  
PRINT MUSEUM  
Músaem Náisiúnta Cló



## WHAT IS PRINTING?

Printing is the reproduction of text and pictures onto various medium including paper and fabric. Nowadays printing is an instant process accomplished mainly by computer. This modern electronic revolution is preceded by a long and varied history of printing.

Paper was invented in China around the year 104AD, but it did not arrive in Ireland for a long time after that. Originally people wrote on paper by hand and so the reproduction of any text was also done by hand. This was a lengthy process so woodblock printing was adopted. This method of reproduction was achieved by carving images and words in reverse into a block of wood, which was covered in ink and printed onto paper.

In the 1440s a man called Johann Gutenberg invented a hand-mould for casting letters of type (type is a piece of metal with a letter in high relief on the top) and the printing press. The letters of type were produced by pouring a hot metal alloy (made up of lead, tin & antimony) into a mould and removing it once hardened. The letters were then set in the required order, held in place by a wooden forme and placed onto Gutenberg's printing press. Ink was



rolled over the letters of type, paper was placed on the forme and pressure was applied to produce the printed piece. Gutenberg's wooden press was inspired by contemporary wine presses.

Composing or setting type by hand took a lot of time, so in the 1800s machines like the Linotype and Monotype, were invented that worked to compose text very quickly. More complicated printing presses were also developed to improve the printing process. They included the Columbian Press, Albion Press and later the Wharfedale Stop Cylinder Press.

Around 1985, Irish newspapers abandoned the traditional printing methods and adopted the new computerised techniques.



## QUESTION TIME!

Where was paper invented?

- China
- Japan
- Germany

Prior to the invention of printing by moveable metal type on a printing press, how was text reproduced? (There may be more than one answer)

- By using wooden blocks
- By writing it by hand
- By photocopying it

What were the two major inventions by Johann Gutenberg?

- The hand-mould for casting letters of type & the printing press
- The Linotype & the bible
- The woodblock printing method & paper

Gutenberg's printing press was made from which material?

- Stone
- Metal
- Wood

What was the metal alloy used to create letters of type?

- Lead, tin and silver
- Lead, gold and antimony
- Lead, tin and antimony

During which decade did Irish newspapers adopt computerised printing?

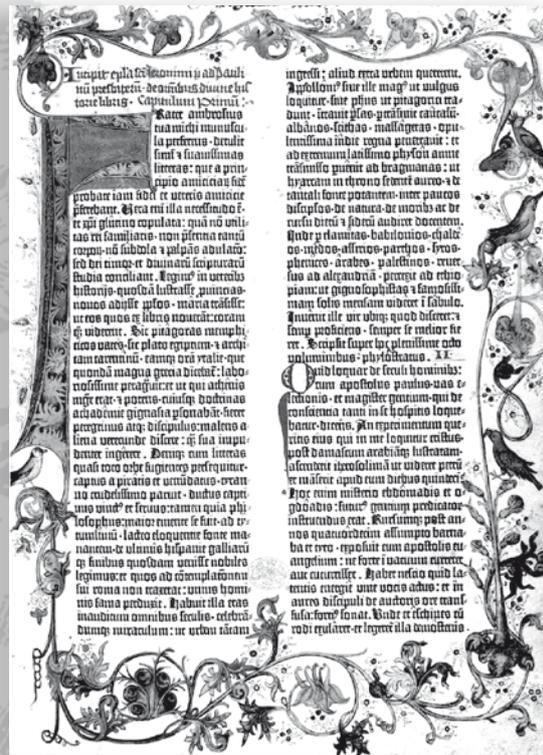
- 1970s
- 1990s
- 1980s

## JOHANN GUTENBERG

Johann Gutenberg was born around 1400 in Mainz, Germany. The details of his life are unknown but he is very famous for his pioneering inventions that revolutionised the production of the written word.

The first book printed using Gutenberg's method was the 42-Line Bible. It was so-called because it had 42 lines on each page. The 42-Line Bible was printed in Latin in 1445.

Gutenberg lived at the end of the Middle Ages just before the explosion of the Renaissance. The Renaissance was a period of new thinking and it brought a great desire for learning to the people. Gutenberg's innovations provided a powerful instrument for the spread of learning and new ideas. It has been said that the Reformation of the Church was advanced by the invention of the printing press.



Johann Gutenberg died in Mainz in 1468 and was buried in the Franciscan church in the town. The Church and cemetery were later destroyed so Gutenberg's grave has now been lost. When he died his contributions to the world of printing were largely unknown but he went on to become one of the most important inventors in history. In the 1990s, Time Magazine voted Gutenberg as the 'Man of the Millennium'.

There is no surviving image of what Gutenberg actually looked like and all the pictures that can be found are fictitious in composition.

## **QUESTION TIME!**

Where was Johann Gutenberg from?

- Mainz, Germany
- Paris, France
- Venice, Italy

During which period did Gutenberg live?

- The Viking Age
- The Middle Ages
- The Baroque Era

What invention was Gutenberg famous for?

- The steam engine
- The printing press
- The light bulb

How many lines are there on each page of the Gutenberg Bible?

- 44 lines
- 22 lines
- 42 lines

In which language was the Gutenberg Bible printed?

- Latin
- German
- French

In what year did Gutenberg die?

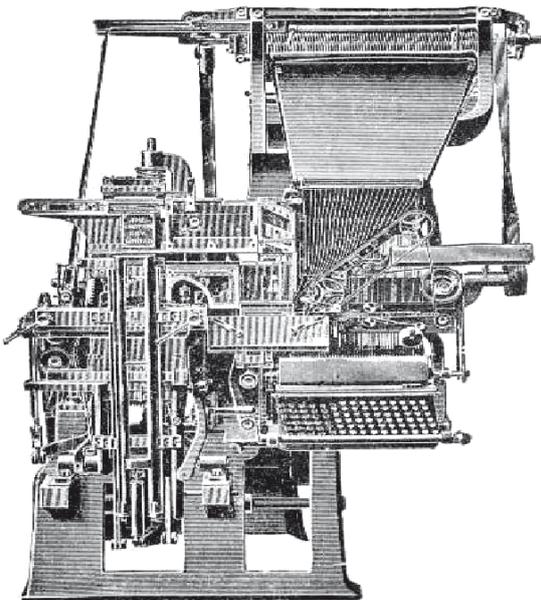
- 1466
- 1467
- 1468

## **TYPESETTING MACHINES**

Gutenberg's method of composing and printing type was still in use for centuries after his death. However, the nineteenth century saw the development of typesetting machines, which increased the speed at which text could be composed.

### **Linotype**

The Linotype was invented in 1884 by Ottmar Mergenthaler. This machine contained a number of storage units called magazines, each of which contained the matrices for different sizes and fonts of type. When the operator struck the keyboard the matrices chosen would assemble in a line. Hot metal was then injected into the matrices, which would produce a metal line of type called a slug. The Linotype was so-called because when Mergenthaler first demonstrated the machine, his colleague announced, "You've produced a line of type"!



Linotype



Monotype Keyboard

### **Intertype**

The Intertype was very similar to the Linotype in design and function; both machines were mainly used in the production of newspapers. The main difference however, was that the Intertype contained a greater number of magazines and therefore a wider variety of fonts from which to choose.

### **Ludlow Typecaster**

The Ludlow also produced slugs by injecting hot metal into matrices, although the matrices were assembled by hand rather than by the machine. As the Ludlow produced type of a large size, it was used to create the headlines of newspapers.

### **Monotype**

The Monotype was invented by Tolbert Lanston in 1896 and was mainly used to produce books. It was a highly complicated device consisting of two separate machines, a keyboard machine and a casting machine to produce the type. It differed from the previous machines because it produced individual letters of type. This meant that if a mistake was made, that letter could be replaced individually.

## **QUESTION TIME!**

Who invented the Linotype?

- Johann Gutenberg
- Tolbert Lansten
- Ottmar Mergenthaler

For what type of publication was the Intertype mainly used?

- Newspapers
- Books
- Posters

What was a slug?

- A printing press
- A slimy garden creature
- A metal line of type

For what type of publication was the Monotype mainly used?

- Newspapers
- Books
- Posters

How was the Monotype different to the Linotype & Intertype?

- It produced a single line of type
- It produced individual letters of type
- It produce headers and headlines

What part of the newspaper was composed on the Ludlow?

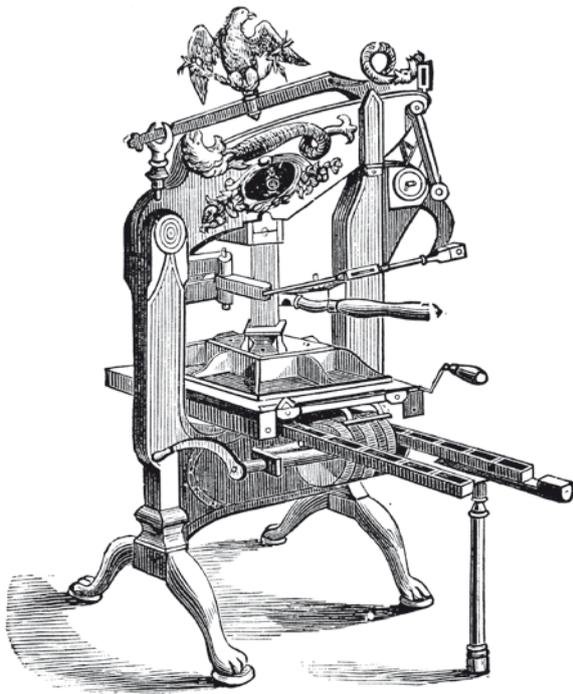
- The sports pages
- The headlines
- The photographs

## PRINTING MACHINES

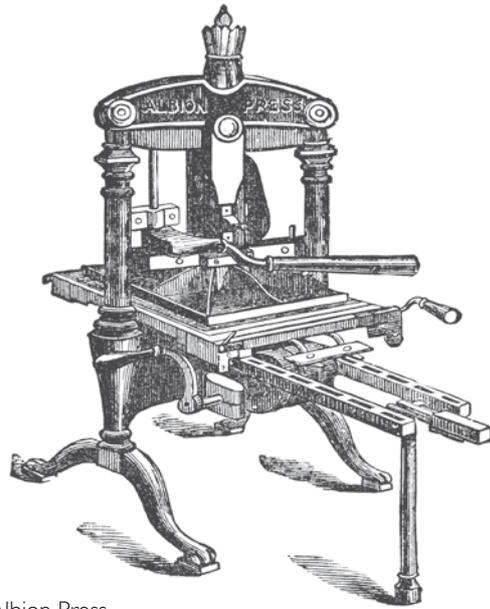
Printing presses remained very similar to the wooden one invented by Gutenberg until the 1800s when the first press made from iron was produced.

### Columbian Press

George Clymer invented the Columbian Press in Philadelphia in 1812. 'Columbia' is another name for America and the machine is adorned with a large eagle, a recognised symbol of America. In fact this press is known for its symbolic decoration. Along with the eagle, Clymer's version included a rattlesnake. However, other countries replaced the rattlesnake with a sea monster and the Germans substituted the eagle for a griffin vulture. The Columbian Press was operated manually and was counter-balanced to make it easier to use.



Columbian Press



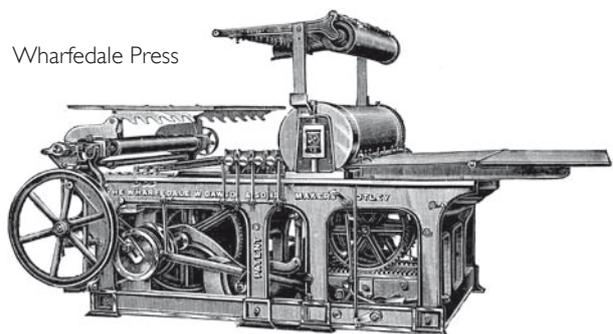
Albion Press

### Albion Press

The Albion Press is often considered to be England's response to the Columbian, even in its name; 'Albion' is an ancient name for England. The Albion was also manually operated but unlike the Columbian, this press was not counter-balanced. It was often the work of the young apprentice printer to operate the Albion Press.

### Wharfedale Stop Cylinder Press

David Payne invented the Wharfedale Stop Cylinder Press in 1856. This press was mechanically operated and as such innovated the speed of printing production; it could produce 1500 copies per hour. Due to its large size and efficient production, this machine was known as the 'workhorse' of the printing industry. It was on a Wharfedale that the 1916 Proclamation was printed.



Wharfedale Press

## QUESTION TIME!

In which century was the first printing press made from iron produced?

- Seventeenth century
- Eighteenth century
- Nineteenth century

Which printing press did an apprentice printer often operate?

- Wharfedale Stop Cylinder Press
- Albion Press
- Columbian Press

Which printing press might be known as the 'Eagle Press'?

- Wharfedale Stop Cylinder Press
- Albion Press
- Columbian Press

Which printing press was known as the 'workhorse'?

- Wharfedale Stop Cylinder Press
- Albion Press
- Columbian Press

What famous document was printed on a Wharfedale Press?

- Magna Carta
- 1916 Proclamation
- United States Declaration of Independence

'Albion' is an ancient name for which country?

- England
- Ireland
- Scotland

## BOOKBINDERS BANNER

The Bookbinders Fellowship Society Banner on display in the Museum is an important piece of industrial history. Bookbinding often took place in printing shops because of the close connection between the two. This banner has an interesting history.

In 1786, bookbinders went on strike to protest against the length of their working day, which lasted from 6am until 8pm. The battle to improve their situation was long and difficult. On 28th June 1788 they were finally granted a reduction of one

hour less per day. This banner was painted almost 100 years later to commemorate this achievement. It was carried in a Labour Day parade in 1894.

The banner is quite symbolic in its content. It contains the flags of Dublin, the four Irish provinces and even the old flag of Ireland. The dove above the men is used to symbolise peace, while the two dogs flanking the Irish flag are symbols of loyalty. The back of the banner celebrates Irish literature with a picture of a monk in a scriptorium surrounded by pictures of famous Irish writers.



## QUESTION TIME!

In 1786, how long was the working day of a bookbinder?

- 12 hours
- 14 hours
- 16 hours

When did the bookbinders achieve their aim to reduce their working hours?

- 28th June 1788
- 27th June 1788
- 28th June 1789

On which day was this banner carried?

- Labour Day
- Christmas Day
- St Patrick's Day

How is loyalty represented in the Bookbinders Banner?

- Dogs
- Men
- Books

Who is celebrated on the back of the Bookbinders Banner?

- Irish Writers
- Irish Singers
- Irish Dancers

What does the dove in the Bookbinders Banner symbolise?

- Peace
- Love
- Wealth



Thank you for visiting the National Print Museum, we hope to see you again soon!

The National Print Museum offers a range of activities including tours, workshops, lectures and open days. See **[www.nationalprintmuseum.ie](http://www.nationalprintmuseum.ie)** for further details.



NATIONAL  
PRINT MUSEUM  
Músaem Náisiúnta Cló

Garrison Chapel, Beggars Bush, Haddington Road, Dublin 4.  
T: 01 6603770 F: 01 6673545 E: [printmuseumedu@iol.ie](mailto:printmuseumedu@iol.ie)  
W: [www.nationalprintmuseum.ie](http://www.nationalprintmuseum.ie)