Chapter 9
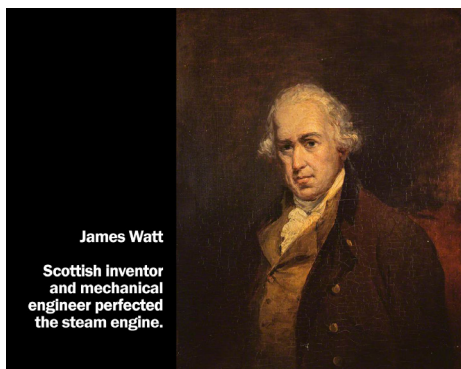**Graphic
Design
and the
Industrial
Revolution**

1760 - 1840

9. Typography for an Industrial Age

The general historical time period in terms of date 1760 through 1840 is called the industrial Revolution.

It was a major shift in society, in economics, which had major ramifications for life on earth.

James Watt

**Scottish inventor
and mechanical
engineer perfected
the steam engine.**

The core of the Industrial Revolution centered on energy:

James Watt perfected the steam engine in the 1780's and by the end of the century steam power increased hundred-fold...
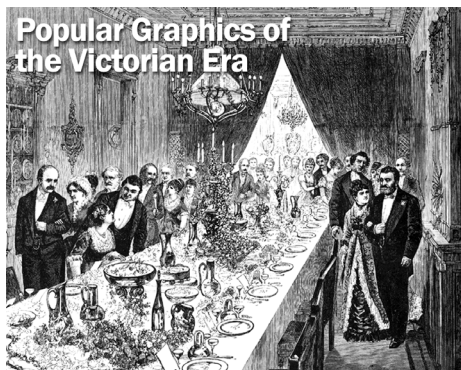

Animal Power   **Human Power**

Wind Power   **Water Power**

Up until that time all power was pretty much by humans and animals... With wind and water making up a much smaller percent.

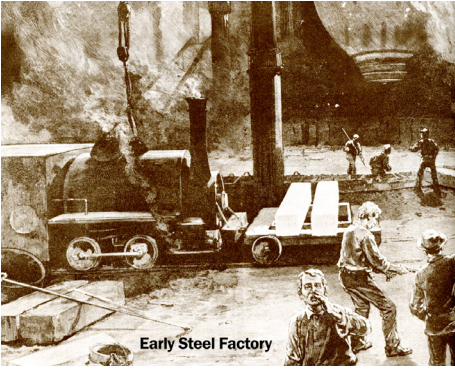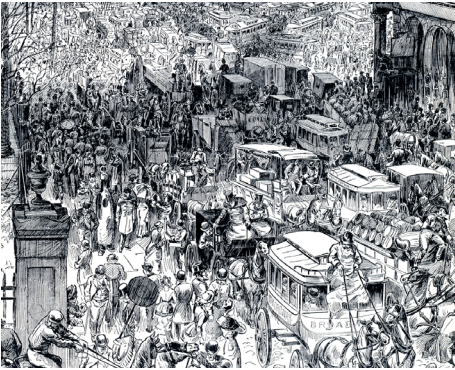**Popular Graphics of
the Victorian Era**

Add to Steam, the new sources of electricity and gasoline engines, also by the end of the century, and you have an extreme change to the energy landscape.

The increase of energy, combined with growing scientific and mechanical advances led to the growth of factories and machine driven production.

Early Steel Factory

The growth of factories in turn led to massive amounts of people leaving their farms and moving to the cities.

These cities grew rapidly and wealth was distributed more widely...

Political power began to shift away from the aristocracy (the royals)

To the capitalist manufacturers and to merchants.

Capital investment in machines for mass manufacture in practically every known industry created a spiraling production cycle:

A rapidly growing urban population with expanded buying power stimulated increased technological improvements.

The improvements allowed mass-production and lower costs for goods and more abundance of these goods.

That in turn created a mass market and an even greater demand.

This supply-and-demand process continues to this day.

The downside of this was also that a large amount of the huge workforce had some pretty terrible living conditions -- filthy tenements, unsafe working conditions, 13-hour days and unexpected shutdowns from over-production.

Critics of the day bemoaned that civilization was shifting away from an interest in humanistic values and moving toward a preoccupation with material goods.

On a broad spectrum however, the overall standard of living in Europe and America did go up.

And with all this mass production and mass consumption, the era of mass communication was born.

Up until this time printing and graphic design was about the dissemination of information through books and broadsides. The faster pace of an increasingly urban and industrialized society produced a rapid expansion of jobbing printers, advertising and posters.


Family Print Shop

The previous unity of design and production ended. Earlier, a craftsman would create a chair or a pair of shoes from the ground up -- the concept, the design, and the item itself.
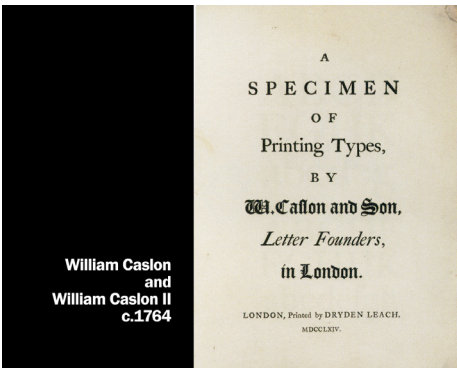
So too a printer would be directly responsible for all aspects of this craft:

He would design and cast the typeface, do the layout, and print and bind the book.

Often the printer was also the writer, or editor, or research guy creating the idea in the first place.
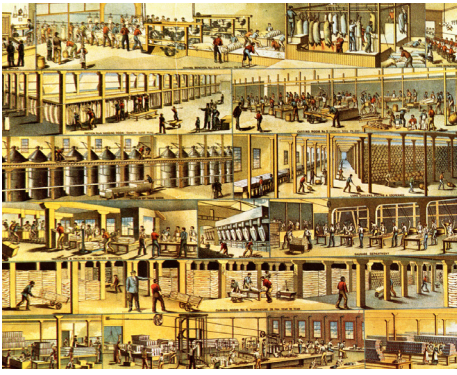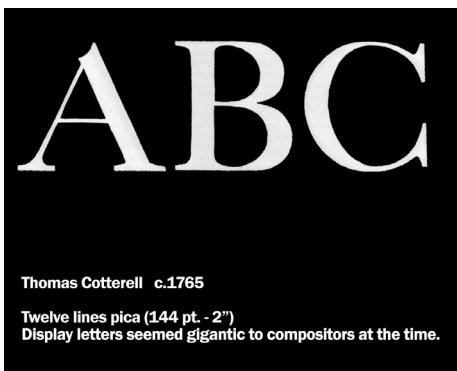
But it was inevitable that the factory system of mass production, which at it's core was division of labor / job specialization, would also be adopted and eventually dominate the graphic arts industry.

A SPECIMEN OF Printing Types, BY W. Caslon and Son, Letter Founders, in London.

LONDON, Printed by DRYDEN LEACH. MDCCLXIV.

William Caslon and William Caslon II c.1764

The 1800s were a staggering display of new technologies and mass production... And in terms of typography and typeface design, it also became an explosion of new types.

It is said that William Caslon was the grandfather of this typography revolution. His heirs, along with two of his apprentices, Joseph Jackson and Thomas Cotterell began thinking in terms of type as a more important element of graphic design.

ABC

Thomas Cotterell c.1765

Twelve lines pica (144 pt. - 2")
Display letters seemed gigantic to compositors at the time.

Thomas Coetterell began casting type in large bold letters as early as 1765.

MINT main.

Robert Thorne 1821 Fat Faces

Quousque tandem abutere, Catilina, patientia nostra? quamdiu nos etiam furor is te tuus eludet? quem after CONSTANTINOPLE £1234567890

As competition grew between letterpress and lithography, type faces became bigger and bolder.

Which inevitably led to the invention of "Fat faces"... And they became a major category of type design. These faces were developed by one of Thorne's pupils, Robert Thorne about 1803.

Vincent Figgins
Antique Font c.1815 Also *Egyptian* or *Slab-Serif*

The 2nd major innovation in type design was called "antiques" or "Egyptian" type faces. These were originally developed by Vincent Figgens who as an active competitor of Thornes.

They are defined by slab-like rectangular serifs, they have a mechanical feeling and show even-weight and short ascenders and descenders.

SIXTEEN-LINE PICA, ANTIQUE, NO. 1.

MIN

V. FIGGINS.

Vincent Figgins
Antique Font c.1840 Also *Egyptian* or *Slab-Serif*

By 1840 Figgens' Antique fonts had become much more refined.

Quosque tandem abutere Catilina patientia
FURNITURE 1820

Quosque tandem abutere Catilina patientia nostra? quamdiu nos
W. THOROWGOOD.

Robert Thorne 1821
Egyptian type designs

In a type specimen book of Thorne's type published in 1821, the name Egyptian was given to these slab-serif fonts. Whey were they called Egyptian?

Rosette Stone

Discovered by Napoleon's troops in Rosetta, Egypt in 1799
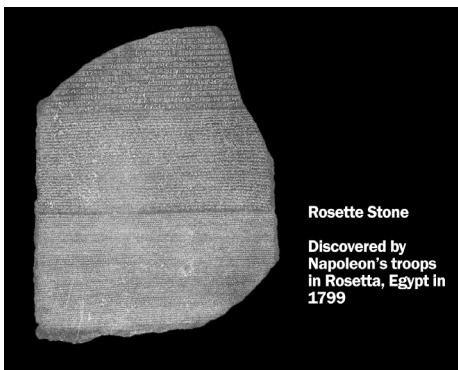
Napoleon had just found the Rosetta Stone some 15 years earlier, so as hieroglyphics were being deciphered there was a fascination with all things Egyptian.

As early as the 1830s, a variation of Egyptian, having slightly bracketed serifs and increased contrast between thicks and thins, was called Iconic.

Robert Besley with Thorowgood, Specimen of *Clarendon*, 1845
A slightly condensed Egyptian

In 1845 William Thorowgood and Company copyrighted a modified Egyptian called Clarendeon. It was in essence a slightly condensed Egyptian with stronger contrasts between thick and thin.

Stephenseon Blake Foundry
Specimen of *Clarendon*, 1835
A larger, more pronounced version of *Clarendon*.

A larger and even more condensed version was issued by the Stephenson Blake foundry in 1835.

Tuscan with ornamental serifs.

Antique Tuscan with curved and slightly pointed slab-serifs.

Figgen's 1815 specimen books also displayed the first 19th century version of Tuscan-style letters.

Characterized by serifs that are extended and curved. This style of font was put through an astounding amount of variation during the 1800s... Often with bulges, cavities and ornaments added in large quantities.

Vincent Figgens *In Shade*, 1815

The first three-dimensional or perspective fonts were fat faces.

In 1815 Vincent Figgens showed styles that projected the illusion of three dimensions, and the type appeared almost as bulky objects rather than simple flat shapes of letter forms.

Johann Heinrich Meyer Foundry in Germany 1835

Decorative three-dimensional fonts
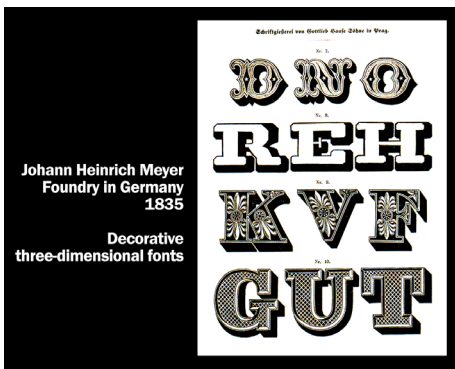
Adding this perspective to type became very popular world-wide and type foundries began adding perspective to every existing face. In addition, the large display faces were often heavily ornamented and detailed.

Vincent Figgens, *Pearl Outline* 1833
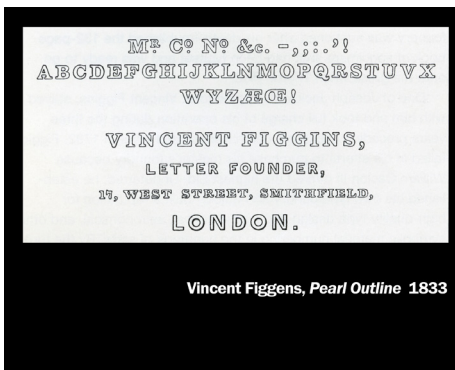
Type foundries also began varying the weight of the perspective, sometimes to just a slightly larger thickness. Eventually these started to be called "drop-shadow" fonts.

William Thorowgood, *Reversed Egyptian Itlaic* 1828

And by simply reversing a typeface: printing white letters on a background field of black, could add to a compositor's creative options and also provided for an even larger foundry library.

Woods and Sherwoods, ornamental fonts 1838-42

The wide fat-face letterforms provided a background for pictorial and decorative elements.
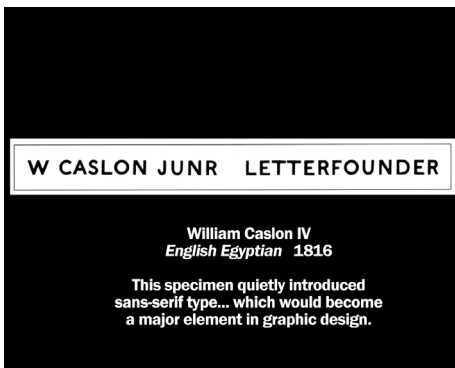
Because of the mechanization of the manufacturing process during the industrial revolution made the application of decoration more economical and efficient, designers of furniture, household objects, and just about everything else, started embellishing everything with decorative designs.

Naturally, type designers did the same thing.

Rand and Avery foundry 1867

The third, and one of the biggest, if not the biggest, innovations of the 1800s made a very modest and low-key debut in an 1816 type specimen book by William Caslon the Fourth.

There, buried in the back of the book, behind all of the decorative display fonts, was one simple line.

W CASLON JUNR   LETTERFOUNDER

William Caslon IV
English Egyptian   1816

This specimen quietly introduced sans-serif type... which would become a major element in graphic design.

It was the first Sans-Serif font.

It appears to been an Egyptian font that simply had it's serifs removed. Caslon named it "English Egyptian".

TWO-LINE GREAT PRIMER SANS-SERIF.
**TO BE SOLD BY AUCTION,
WITHOUT RESERVE;
HOUSEHOLD FURNITURE,
PLATE, GLASS,
AND OTHER EFFECTS.
VINCENT FIGGINS.**

Vincent Figgens Great Primer Sans-serif 1832

Dorics
Grotesques
Sans Surryps
Gothics

Sans-Serif fonts would ultimately become extremely important in the world of 20th century graphic design... But they originally were used primarily for subtitles and descriptive verbiage added in a very small point size underneath the large ornamented display type that dominated the graphic design of those times.

Then, in 1830, three more foundries introduced their own versions of the serif-less typeface. And each foundry had their own name for the style:
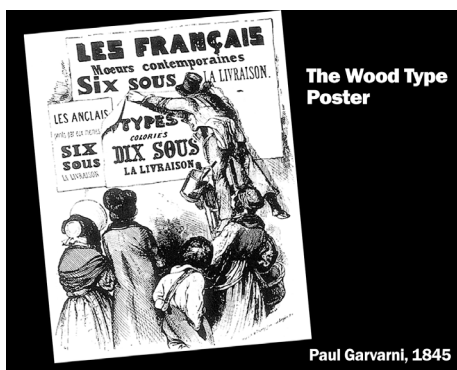
Caslon called it Dorics
Thorowgood call it Grotesques
Blake & Stephenson called it Sans Surryps
Boston Type and Stereotype Foundry - Gothics
Vincent Figgens called it Sans Serif.

The word "sans" in French translates to: "without".

THE WOOD TYPE POSTER
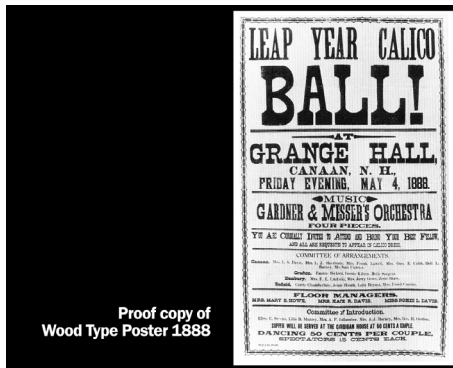

The Wood Type Poster

Paul Garvarni, 1845

As demand for commercial printing increased, bigger and bolder type faces were in demand... But casting metal type in larger sizes presented problems...

It was difficult to keep the metal in a liquid state when pouring into the molds, casting such large sizes created uneven cooling which in turn caused uneven surfaces. The large sizes proved to be expensive, brittle and the weight alone could get outrageous.

Wood Type Poster 1854

So in 1827, Darius Wells, a printer, began to experiment with carved wooden type and ended up inventing a special lateral router that enabled the economical mass manufacture of large wooden type.

Durable, light, and half the cost of metal, it was quickly adapted by printers everywhere and had a significant impact on poster and broadsheet design.

Proof copy of Wood Type Poster 1888

Wells opened a type foundry making these wooden fonts, and before long wood-type manufacturers sprang up throughout America and Europe.

The ability to print in large fonts fueled an ever increasing demand for advertising posters and handbills. Due in a big part to customers in the form of traveling Circuses, Vaudeville Troupes, Clothing stores, and railroads.

Handbill for an excursion train 1876
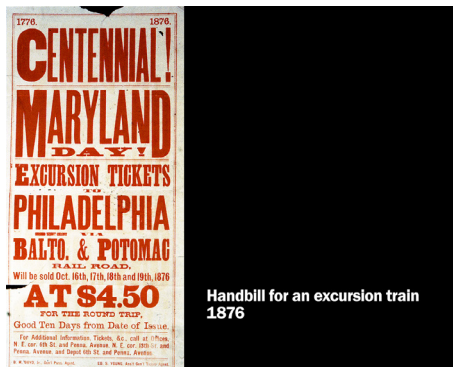
Up until this point, most advertising printing had been merely 'side-jobs' for printers who mainly published books and newspapers. But commercial printers soon began to proliferate.

Printer's Lock Up Form
Smiling Dog Press

The designer in these new commercial print houses was the type compositor -- the need for all elements to be locked down in a form to be put into the press dictated the overall design.

Design decisions were pragmatic: Long words and copy dictated condensed type styles; short words or copy would get set in expanded faces.

Printer's Lock Up Form
Smiling Dog Press

Wood and metal type were not exclusive... They are both used together, even in the same form.

Decline and disappearance
of typographic poster houses:

• Advances in lithographic printing

• Increased circulation of magazines and newspapers offering advertising space.

• Marked decline in amount of traveling entertainment shows.

The typographic poster houses began to decline after 1870 due to new advances in lithographic printing. Lithography allowed for more pictorial and colorful posters.

The decline and eventual disappearance of typographic poster houses was also fueled by the explosion of newspaper and magazine publishing which offered space advertising. In addition, by the turn of the century there was a marked decline in the amount of traveling entertainment shows.

Harrild and Sons,
London 1906
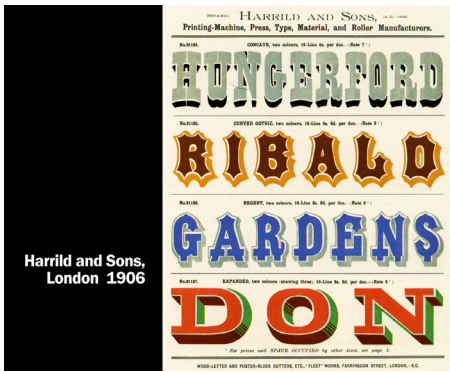
And the final nail in that coffin was legal restrictions that began to be placed upon the display of posters.

Yet wood display type continued to be produced up until the early 1900's.
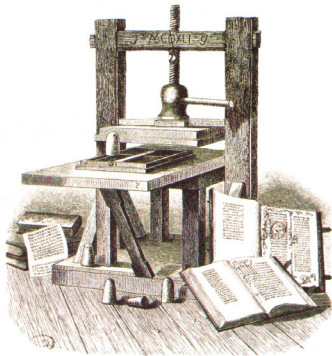
A Revolution in Printing

The wooden press that Gutenberg had devised was the standard for over 3300 years... But not surprisingly, the industrial revolution created some big changes in the printing press.
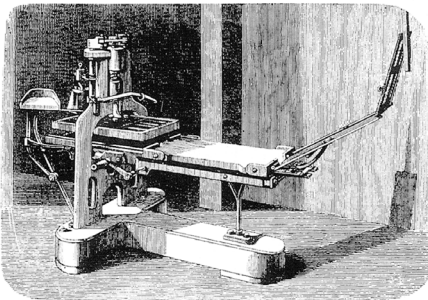

All-Iron printing press
invented in England by Charles Stanhope

The first was the invention of an all metal press by Lord Stanhope -- the screw mechanism required one tenth the manual force needed as on the old wooden press, while at the same time allowed a 200% increase in paper size.
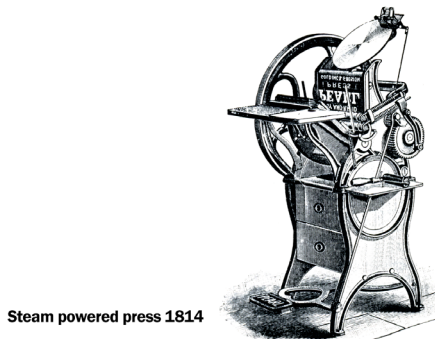
Steam powered press 1814

The obvious next innovation came in 1811 when a guy named Koenig attached a steam engine to the process and created high speed printing -- his press produced 400 sheets an hour compared to the 250 on a hand press. The ink was applied by rollers instead of by hand.
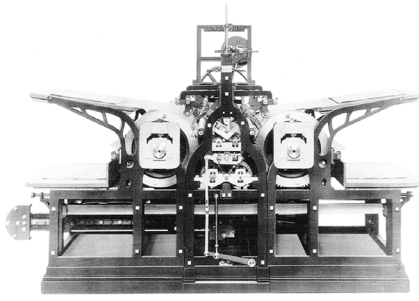
The first steam-powered cylinder press, 1814

Koenig then improved upon this by creating a stop-cylinder steam powered press...

This time the ink was applied by a roller while the type moved back and forth under it...

Which increased the speed dramatically.

By 1814 Koenig had built two for the Times in London which produced 1,100 impressions an hour.

Besides a savings in actual printing times, it also realized a big savings in composition, as the paper had been set twice to print the amount needed for the daily deadline.

Fearing the action of the Luddites, who actively sabotaged mechanized technology, the new presses had to be moved in absolute secrecy.


All across Europe and America printers replaced their hand-presses for steam powered ones.

Of course this caused pricing of printing to plunge and put it in the reach of more people -- no longer did printers merely serve the needs of just scholars and the church.

All the increased printing at lower costs, was further accelerated by the mechanization of paper production.

Originally begun by Nicolas Robert in France in 1798, it was perfected by John Gamble in 1803 in England.


Mechanization of Paper Production
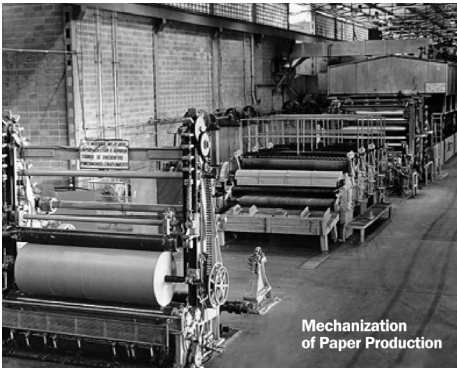
His machine poured a suspension of fiber and water in a thin stream upon a vibrating wire-mesh conveyor belt on which an unending sheet of paper could be manufactured.

Mechanization of Typography
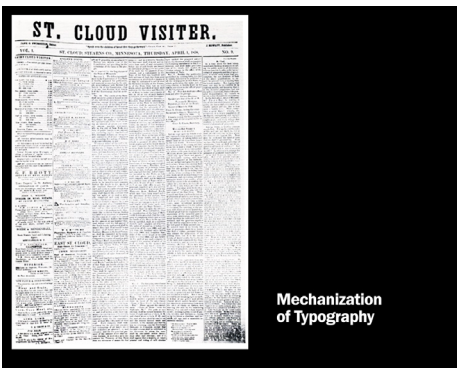
The Mechanization of Typography
By the middle of the 1800s presses could produce 25,000 copies per hour -- but each letter of each word in each and every book, magazine or newspaper had to be set by hand.


Ottmar Mergenthaler
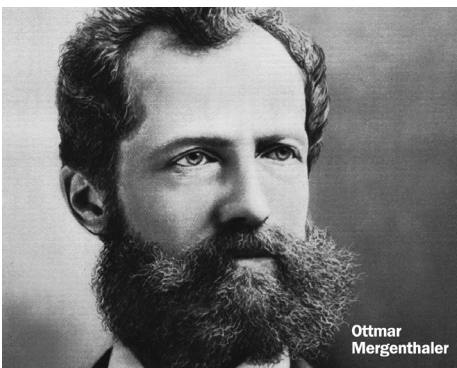
Many, many inventors strove to somehow mechanize the process of typesetting, but it wasn't until 1886 when Ottamar Mergenathaler introduced his Linotype machine that it was achieved.

Merganthaler was a German immigrant working in Boston -- and when he demonstrated his machine at the offices of The Tribune, an editor exclaimed "Ottmar, you've done it! A line o' type!"

Ottmar Mergenthaler
and the Blower Linotype
1886

The Linotype worked like this: small brass molds were stored and when an operator pressed a key, one of the little brass molds would slide down a chute and line up with other molds, then hot lead would be poured, creating a "slug of type."
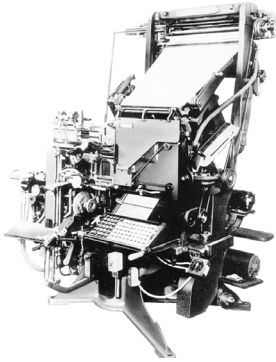
Model 5 Linotype

The Linotype could produce the work of seven or eight hand compositors and replaced thousands of highly skilled hand typesetters. Of course that naturally precipitated much violence and strikes and labor unrest. For awhile...

But the technology fostered a surge in publishing -- books, magazines, newspapers and advertising -- all flourished and the circulation of materials dramatically surged.

By the end of century a new era of knowledge, education and expanding literacy had arrived... And the beginning of mass communication.