

Steel engraving

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Steel engraving, is a commercial engraving technique for printing illustrations, based on steel instead of copper. It has been rarely used in artistic printmaking, although was much used for reproductions in the 19th century. Steel engraving was introduced in 1792 by Jacob Perkins (1766-1849), an American Inventor, for the use of banknote printing. When Perkins moved to London in 1818, the technique in 1820 became adapted by Charles Warren and especially by Charles Heath (1785-1848) for Thomas Campbell's *Pleasures of Hope* with the first published plates engraved on steel. The new technique only partially replaced the other commercial techniques of that time as woodcut, wood engraving, and later lithography. All the illustrations of the Encyclopedia Britannica of 1911 are steel engravings.

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19th century steel engraving.



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The Process of Steel Engraving

Most engraving is done by laying out the broad, general outline onto the plate first. This is commonly referred to simply as etching. After this step is complete the artist can move to strictly engraving the work. The tool most commonly used for engraving is the Burin (tool), which is a small bar of hardened steel with a sharp point. This is pushed along the plate to produce thin strips of waste metal and thin furrows. This is followed by a scraper which removes any burs as they will be an impediment to the ink. It is important to note that engraving must be done in the reverse or mirror image, so that the image faces the correct way when the die prints. One trick of the trade was for engravers to look at the object that they were engraving through a mirror so that the image was naturally reversed and they would be less likely to engrave the image incorrectly. Steel plates can be case hardened to ensure that they can print thousands of times with little wear. Copper plates can not be case hardened but can be steel-faced or nickle-plated to increase thier life expectancy.

19th Century Changes

Until around 1820 copper plates were the common medium used for engraving. Copper, being a soft metal, was easy to carve or engrave and would strike a few hundred copies before the image began to severely deteriorate from wear. Engravers would then rework a worn plate retracing the previous engraving to sharpen the image again. Another advantage to using copper is due simply to the fact that it is a soft metal and can be corrected or updated with a reasonable degree of ease. For this vary reason, copper plates were the preferred medium of printing for mapmakers who would have to change their maps with newly discovered, claimed land, or that which had changed hands.

During the 1820s steel began to replace copper as the preferred medium of commercial publishers for illustration, replacing etching but rivalled still by wood engraving and later lithography. This produced plates with shaper, harder, more distinct lines. Also, the harder steel plates produced much longer wearing dies that could strike thousands of copies before they would need any repair or refurbishing engraving. The hardness of steel also allowed for much finer detail than would have been possible under copper which would have quickly deteriorated under the stress. As the nineteenth century began to close, devices such as the ruling machine made even greater detail possible allowing for more exact parallel lines in a very close proximity. Commercial etching techniques also gradually replaced it.

Steel engraving is still done today but to a much lesser extent. Today, most printing is done using computerized stencils that transfer ink instead of a steel plate. The exception to this is currency which is still printed using steel dies. By using actual steel engraved dies, each bill has a character and feeling that is very difficult for counterfeiters to duplicate. An engraved plate allows the ink to be slightly raised and the paper to be slightly pressed that produces a different sensation that is felt with a stencil ink transfer.

The Late Age of Steel Engraving

By the beginning of the twentieth century, new tools made engraving much easter and exact. One of these tools is the Geometrical Lathe. The Lathe is used to engrave images on plates, which are inturn engraved on rolls for the use of such methods as printing bank notes. The other of these tools is the Engraving Machine. This machine uses a master template to lightly engrave a duplicate image which can be then engraved by hand or by acid method. The machine also makes possible the reduction or enlargement of the letter for the duplicate

See also

- engraving
- line engraving

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- The Technologies of Nineteenth-Century Illustration (<http://www.scholars.nus.edu.sg/victorian/art/illustration/tech1.html>)

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