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Lithography

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Abstract: This article examines the historical aspects of the emergence of lithography, its technical characteristics and influence on the development of art and polygraphy. Particular attention is paid to the role of lithography in the mass production of images in the 19th century and its transformation into modern offset printing. The reasons for the popularity of lithography among graphic artists and its importance in modern conditions are also analyzed.

Keywords: Lithography, printing technology, printing, art graphics, offset printing, history of lithography, color lithography.

Introduction: Lithography is a type of printing in which an image is engraved on a stone by an author-artist or a master lithographer and printed in a special hand printing press or on a special printing machine. The process was invented in the late 18th century by the German playwright and actor Alois Senefelder, who was looking for an inexpensive way to reproduce text and images. Lithography is based on using a smooth surface, usually a stone or metal plate, onto which a design or text is applied using a special oily substance. Post-treatment of the surface with chemical solutions allows oily areas to attract ink, while remaining hydrophilic areas repel it, ensuring accurate reproduction of the image when printed.

METHODOLOGY

One of the main features of lithography is the ability to convey the finest details of the original image. This is made possible by using lithographic stone, a type of limestone with a fine-grained texture that provides a very smooth and flat surface. Such qualities of stone allowed artists and publishers to achieve high accuracy and aesthetic expressiveness in printed works. In addition, the lithography process proved to be more economical and convenient than traditional engraving methods, which helped make it popular in the 19th century.

Lithography played an important role in the development of fine arts and printing. In the 19th century, it was widely used to create posters, illustrations and art reproductions. Artists such as Henri de Toulouse-Lautrec, Paul Gauguin, and Pierre Bonnard actively used lithography as a means of artistic expression, experimenting with color, texture, and form. The technology of color lithography, which appeared in the middle of the 19th century, opened new possibilities for the mass production of color images used in the publication of advertisements, books and magazines.

Color lithography, or "chromolithography" as it is commonly called, is one of the richest visual arts in graphic art. Here, as in no other method, lithography has enormous tools for realizing its creative plan, both in terms of tone and texture, and in terms of the richness of color possibilities. In color lithography, an independent printing form - stone is prepared for each individual color, individual paint. As they say, each color is produced "in its own stone", which requires a separate printing process, machine or machine operation. When performing color lithography, the main and most important task of the lithographer is to divide his color composition into component colors, the totality of which can convey his artistic intention, desired color, color and tone relationships, nuances, etc.

This complicates the task, because if the lithographer does color lithography not only for himself, but also for wide distribution, printing in large quantities, he must

find colors and combinations that limit him to the smallest. The working procedure in color lithography is as follows: depending on the nature and complexity of the intended color lithography, the artist makes a more or less full-color sketch or even a detailed and final color composition - the original.

This sketch or original must be prepared in full size, i.e. in the same format as a finished color lithograph. Here the artist determines the number of paints and the technique of performing each of them, that is, he determines in advance which color of paint will be painted on the smooth stone, which one will be painted on the vertebral stone, and what color will be done with it. Then the outline is removed from this sketch or from the original using one of the methods described above.

RESULTS

Modern technology has significantly changed the lithographic process, but its basic principles remain the same. In the 20th century, lithography evolved into offset printing, one of the most common methods of mass reproduction of printed materials. Unlike classic lithography, offset printing uses an intermediate medium, which provides greater clarity and consistency of the image. However, traditional lithography remains popular among graphic artists, who appreciate it for its unique aesthetic qualities and craftsmanship.

Lithography is also the name given to the final result of the work - printing from stone. The same term applies to a printing plant where lithography is carried out. At the same time, lithography means not only when stone is taken as a material for a printing plate, but also such types of lithography when printing from metal plates - zinc or aluminum. The latter type of lithography is sometimes referred to by the special term "algraph".

DISCUSSION

Working on metal plates is classified as lithography, because according to the principle of printing, these varieties are classified as flat plate printing. There is almost complete similarity in processing the shape and printing with real lithography, and zinc and aluminum only replace the stone. The formation of lithographic stone is explained by the gradual sedimentation of lime carbonate and other mineral substances at the bottom of large rivers, carrying a lot of sand, clay, minerals, etc. in their flow.

First, the heavier particles fall to the bottom of the river, and then, as the current loses speed, the lighter and smaller particles accumulate. Thus, these deposits accumulate gradually, the upper layers increasingly press the lower layers, and over thousands of years or even millions of years, sedimentary rock is formed. Due to changes in the earth's crust over the centuries, these areas rise and end on its surface. The period in which the lithographic rock was laid down is called the "Jurassic period" in geology; it ended long before man appeared on earth.

Printing color lithographs is no more difficult than printing black (monochrome) lithographs. The main thing here is the ability to easily and quickly create the desired color, which, together with others, will give the final print the necessary new colors and shades. Before you start printing color lithography, you need to paint and slide the paint of the desired color onto the plate. Then they put the stone of the first ink to be pressed on the machine and adjust it, that is, set the press pressure, select and calibrate the rib, prepare the deck folder, rib, printing paper, etc. Then the stone is washed as usual with water and turpentine.

CONCLUSION

In conclusion, it should be said that lithography is not only a historically important technology, but also an important artistic and industrial tool that continues to develop and finds application in various fields of activity. It shows how the combination of scientific principles and creativity can lead to the creation of a universal style capable of satisfying both the technical and aesthetic needs of mankind.

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