Frederic Eugene Ives Biography

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Biography

Responsible for the halftone process which breaks down illustrations and photographs into tiny dots for print reproduction, Ives spent most of his career studying the mechanics of printing and photography. Born near Litchfield, Connecticut, on February 17, 1856, Ives apprenticed as a young man at the *Litchfield Enquirer* newspaper, and soon after opened a photographic studio in Ithaca, New York.

After becoming the head of the Cornell University photographic laboratory in 1875, Ives began to study and experiment in the field of photographic reproduction. Newspapers and other print media at the time had not yet been able to harness the potential of photography; because printing involved pressing an engraved plate coated with ink onto paper, their challenge was to find a way to translate finely-shaded pictures such as photographs onto plates. Ives studied the process of photoengraving, through which designs are projected onto plates treated with light-sensitive substances, to create engravings. At Cornell, he developed the *swelled gelatin process*, which refined the sensitivity of the photoengraving process using a gelatin-based coating; however, the process still could only reproduce black lines on white. To translate the gradations of shading in photographs, Ives hit upon the idea of breaking down photographs into dots of various sizes to convey shades, or "halftones," which gave the name to the process that revolutionized printed illustrations.

In 1885, he developed the halftone technique which has remained largely unchanged through today: the illustration to be reproduced is placed behind a glass screen gridded with fine black lines and photographed. The resulting image, composed of thousands of dots of various sizes, is then photoengraved. Soon after, Ives invented a color halftone process, in which a color illustration is pictured through three screens, each of which separates out a particular primary color; the images are then overlayed to create a color reproduction.

In his lifetime, Ives patented more than 70 other inventions dealing with optics, printing, and photography. They included the photochromoscope camera and the chromogram, which, respectively, produced and projected a three-color photo negative; the latter two inventions were important in the evolution of color photography and printing. Ives died on May 27, 1937, in Philadelphia, Pennsylvania.