20th Century Black and White Papers

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By 1890 the key elements that would define 20th century black and white photographic printing were in place. Innovations such as baryta-coated paper, silver halide formulations of various light sensitivities, and gelatin emulsions were sufficiently well-understood that they could be used (more or less) reliably in combination. But while the materials had been in use for nearly ten years, the trend toward the supremacy, and near universal adoption of silver gelatin developing-out papers by manufacturers and photographers alike, was anything but clear at the turn of the 19th Century.

At this time several competing processes were available and were meeting great success in the marketplace. During the mid 1890's, collodion silver printing-out papers (P.O.P.) dominated the American marketplace, followed by silver gelatin printing-out papers. Of the ten or so leading manufactures of paper in the United States, only Eastman Kodak and Nepara Chemical produced silver gelatin developing-out papers (D.O.P.) and sales of these papers were poor and declining. The primary obstacle to greater commercial success of these papers was also considered by manufacturers to be one of their most highly prized attributes: the high light-sensitivity of the silver-bromide emulsion. Exposed by artificial light to form a latent image which was then chemically developed, papers that incorporated "fast" silver-bromide emulsions allowed for a rapid and more reliable production of prints as compared to the printing-out papers that relied on sunlight. However these papers required careful handling in a darkroom and the chemical development of a latent image was unfamiliar territory for the vast majority of photographers. At the turn of the century, photographers were more accustomed to the working properties of much less light-sensitive, "slower," gelatin and collodion printing-out papers that were more closely related to the familiar but passé albumen paper in terms of working properties and image tone.

The eventual key to commercial success for silver gelatin developing-out papers was not the production of faster silver bromide emulsions but slower ones. Among the first to achieve this critical balance of properties was Leo Hendrik Baekeland (1863-1944), founder of the Nepera Chemical Company of Yonkers, New York. Baekleland created a silver chloro-bromide emulsion that could be handled easily in "very subdued daylight" but was "500 times quicker than albumen" meaning it could be rapidly exposed by gaslight and would reliably form an image through chemical development. First produced in 1887, Nepera marketed this new paper under the brand name *Velox*. By 1898, *Velox* had gained significant market share and other manufacturers rapidly followed suit by producing their own "gaslight" papers. Eastman Kodak's early entry into this field, *Dekko*, was less than successful prompting the purchase of *Velox* by George Eastman in 1899. Immensely popular, especially among amateur photographers, silver gelatin developing-out gaslight papers had by 1920 almost completely displaced collodion and gelatin printing-out papers.

Gaslight paper, like printing-out paper, was contact printed meaning the light sensitive photographic paper was placed in direct contact with a negative, usually in a printing frame, and then exposed to light. Mostly manufactured for use with negatives produced by the generation of new handheld cameras produced at the turn of the century, the vast majority of gaslight papers were

Figure 1. *An example of collodion printing-out Aristo paper from 1896 made by the American Aristotype Company of Jamestown, New York. American Aristotype was the leading manufacturer of photographic paper in America during the years 1898-1899 (M#366)*

used to make prints no bigger than 3 ¼ x 5 ½ inches. During the late 1910's, electricity and the light bulb paved the way for key innovations in the development of photographic enlargers compact and safe enough for use in the darkroom. By the early to mid-1920's, enlarger designs were sufficiently well-refined to be adopted by increasing numbers of professional photographers. As photographic printing increasingly moved into the darkroom, leaving behind a reliance on sunlight or gaslight, new papers were developed to reach this emerging market. These new papers, identified by manufacturers as "enlarging" or "projection" papers tended to incorporate silver-bromide emulsions and were highly light-sensitive, much like silver gelatin developing-out papers in the pre-gaslight era.

The introduction of enlarging papers geared toward professional photographers in the 1920's catalyzed tremendous diversity as manufacturers worked to compete for this new market niche. Brands, surfaces, and finishes proliferated. To help customers make sense of all the new choices, manufacturers began to produce elaborate and expensive sample books of their papers and, by the end of the 1920's, began to routinely classify their papers by surface texture, sheen and base color. *Velour Black*, produced by the Defender Photo Supply Company of Rochester, New York, and a favorite of Edward Weston in the 1930's, was available in twenty two different surface finishes including *Buff Platinum Matt* and *Velvet grain White Luster*. One of the pinnacle achievements of this period of great diversity was *Gevaluxe Velours*, produced by the Geveart Company of Antwerp, Belgium starting in 1933. Promoted by the company as the "most beautiful paper ever made," *Gevaluxe Velours* had a unique texture that produced an extraordinarily matte surface with intensely deep black shadows unlike any photographic paper before or since.

Innovations along these lines more or less ceased by the outbreak of World War II at which time the production of photographic materials was almost exclusively focused on military applications. One exception was the introduction of "multi contrast" papers by Ilford Limited of London in 1940 and soon after by Defender Photo Supply Company. The contrast of these papers could be matched to the requirements of the negative through the use of different colored filters applied during exposure. The photographic industry's emphasis on wartime production caused shortages for both papers and film for civilian applications which were especially severe in Europe.

Following the war, the photographic industry began to consolidate, and manufacturers gradually pared down their offerings of silver gelatin developing-out papers. The introduction of Kodachrome and Agfacolor in the mid-1930's began a shift in manufacturer and consumer focus toward color, which accelerated in the

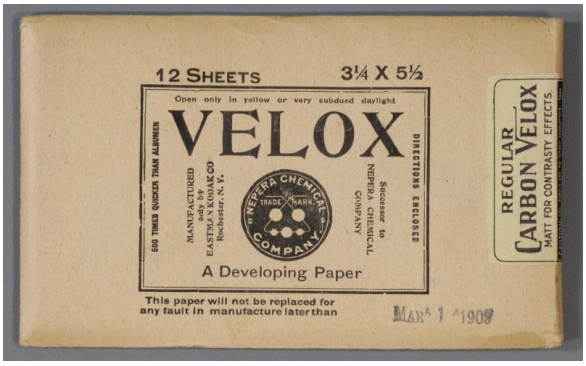

Figure 2. *Velox paper from the turn of the 20th century. Though manufactured by Kodak, the package still bears the Nepera Chemical Company logo. A gaslight paper, the package advises it is "500 times quicker than albumen" and to "open only in yellow or very subdued daylight" (M#2154).*

Figure 3. *An early projection or enlarging paper Cyko Enlarging from ca. 1916 manufactured by the Ansco Company of Binghamton, New York (M274).*

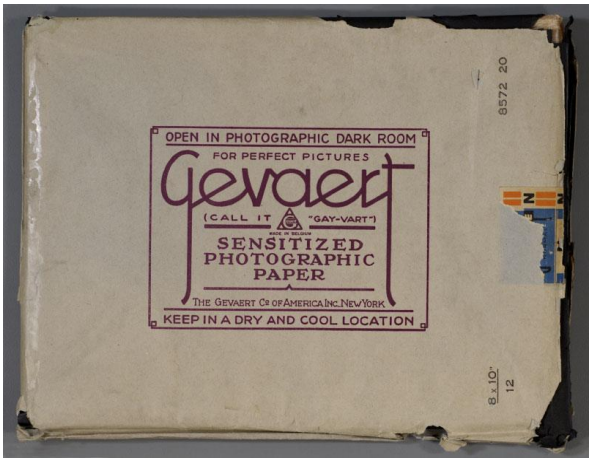

Figure 4. *Gevaluxe, manufactured by the Gevaert Company of Antwerp, Belgium, was promoted by the company as "the most beautiful paper ever made" (M862).*

1940's with the introduction of Kodacolor prints. This industry-wide realignment toward color was virtually complete by the mid 1950's. Silver gelatin developing-out papers remained viable and abundant in this period, but only within ever-more narrowly defined niches. A sample book of Kodak silver gelatin developing-out papers from 1967 promotes its various papers for use in "commercial, press, and industrial" applications as well as for "bridal portraits" and "school pictures" with certain surfaces that "will fold without cracking" or that are useful for "airbrush work," or "copying." Resin-coated (RC) black and white papers were introduced into this increasingly prosaic and practical milieu by Kodak in 1968, and other manufacturers quickly followed. By sealing the paper base between layers of polyethylene, RC papers permitted very quick processing since only the emulsion absorbed processing chemistry and wash water.

Within this larger utilitarian context, fine art photographers managed to maintain an impressive vibrancy and creativity. In America, the teachings and writing of masters such as Edward Weston (1886-1958), Berenice Abbott (1898-1991), Ansel Adams (1902-1984), and Minor White (1908-1976) influenced generations of photographers, curators, and collectors towards attaining a more highly refined understanding and respect for the expressive potential of the black and white photographic print. Adams in particular was expansive in the comparative merits, advantages, and disadvantages of a wide range of commercially available silver gelatin developing-out papers. And while fine art printmaking could never sustain large-scale manufacturers (leading to the inevitable but somehow still shocking announcement that Kodak was ceasing production of all black and white photographic papers in 2006), smaller manufacturers filled the gap, making extremely high quality papers specifically for this market segment.

Gradually, as the impact of digital photography on large-scale manufacturers is becoming clearer, so too is the near-term future of gelatin silver developing-out papers. As an alternative process, like platinum and gum bichromate, the existence of silver gelatin papers seems secure. A small but diverse range of manufacturers (among them some that make specialty inkjet papers for digital printing) remain committed to the production of silver gelatin developing-out paper. In honor of Ansel Adams and Minor White, the American photographer Paul Caponigro (1932-) wrote: "It still amazes me how such a mechanical process as photography allows subject and silver to be affected by emotion and intention." Now, at the beginning of the 21st century, the ultimate fate of silver gelatin developing-out paper seems to rest with those that share this amazement.

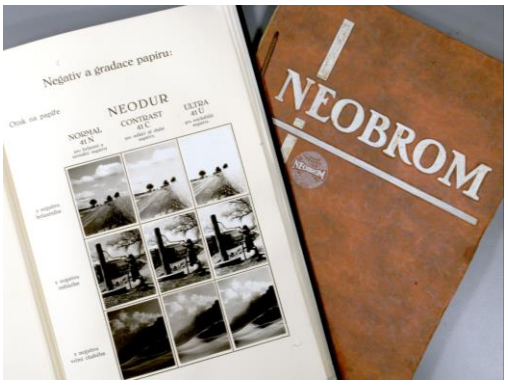

***Figure 5**. Elaborately produced samples books showing the full variety of a manufacturer's papers were especially popular in the 1930's. These books illustrate papers made by the Neobrom Company, Brno Czechoslovakia from circa 1935 (M#2142 & M#2089).*

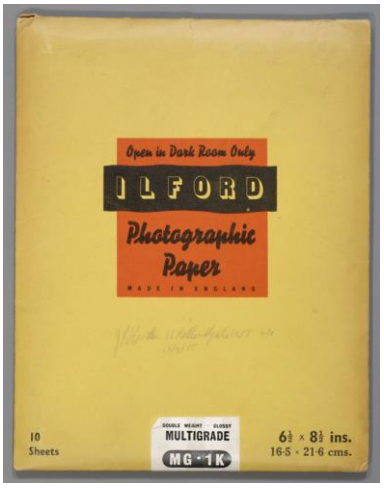

Figure 6. Multigrade, a variable contract paper manufactured by Iford Limited, London ca. 1955. Ilford introduced variable contrast papers in the early 1940's (M#2179)

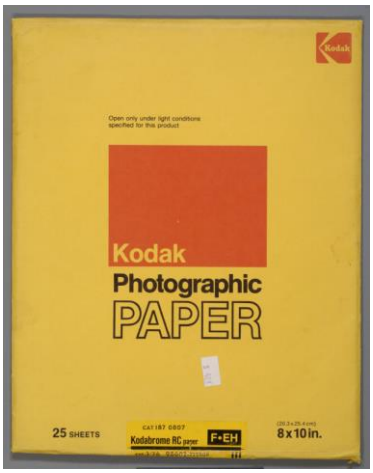

Figure 7. An early resin-coated paper, Kodabrome RC from the early 1970's (M#2243)

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Figure 8. Prestige by Bergger S.A. of Paris dating from 2006 is marketed toward fine art photographers (M#2383)

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