

## **Printing methods for illustrations in my Special books.**

### **Alice in wonderland. Macmillan 1898 John Tenniel illustrations**

The iconic illustrations for the 1898 Macmillan edition of Alice's Adventures in Wonderland were created through a meticulous multi-step process of wood engraving and electrotyping\*. Although Sir John Tenniel was the artist, the final printed images were the result of a highly technical collaboration between him, author Lewis Carroll, and the master engravers, the Dalziel Brothers. Tenniel did not simply draw on paper for the printer; he worked directly with the physical materials of the book.

**Pencil Sketches:** Tenniel first drafted rough designs on paper to agree on subjects and placement with Carroll.

**Drawing on Wood:** He then transferred his finished drawings directly onto blocks of dense, whitened boxwood using a very hard, sharp pencil.

**Hand Engraving:** The Dalziel Brothers used specialized steel tools (like burins and spitstickers) to carve away the "white" areas of the wood, leaving Tenniel's lines standing in relief.

**Cross-Hatching:** To create depth and shading, Tenniel used a "cross-hatching" technique, which the engravers had to meticulously replicate in wood.

\*Electrotyping is an electrochemical process rather than a purely mechanical one like stereotyping. It involves three main steps:

**Moulding:** An impression of the original type or engraving is made in a soft material, usually wax, plastic, or lead.

**Conductivity:** Because wax doesn't conduct electricity, the mould is dusted with graphite or a fine metal powder.

**Electroplating:** The mould is placed in an electrolyte bath (often copper sulphate). Using an electric current, a thin shell of copper (or sometimes nickel) is deposited onto the mould.

**Backing:** Once the metal shell is thick enough, it is removed from the mould and "backed" with a molten lead alloy to give it the strength and thickness needed for a printing press.

**The 1966 Michael Joseph edition of The Original Water-Color Paintings by John James Audubon Birds of America** was printed using modern photo-reproductive techniques, specifically colour offset lithography. Unlike the 19th-century originals, which were hand-coloured engravings, this mid-20th-century publication used high-fidelity photography to capture the actual original watercolours held by the New-York Historical Society.

**Printing Process** High-quality offset lithography.

**Preparation:** The color plates were prepared by Chanticleer Press using modern photographic techniques to ensure accuracy.

The book was printed and bound at The Lakeside Press (R.R. Donnelley & Sons Company). **Typography:** The text was set in Monotype Walbaum by Craftsman Type Inc.

**Paper:** Oxford Paper Company manufactured a special paper specifically for this edition

**The coloured plates in the National Audubon Society Baby Elephant Folio of The Birds of America** (edited by Roger Tory Peterson and Virginia Marie Peterson) were printed using high-fidelity offset lithography. This edition, published by Abbeville Press, was a landmark in modern book production, utilizing advanced 20th-century technology to reproduce the look of Audubon's original 19th-century hand-coloured engravings.

Since its debut, several notable versions and reissues have been released:

1981: The original First Edition and Deluxe Leather-bound editions were released by Abbeville Press (and sometimes Artabras or Harrison House).

1990: A widely available reprint with a slightly updated layout. My edition

1993: A Revised Edition with 694 pages was published.

2003: Another major reissue by Abbeville Press, often featuring a white dust jacket.

2023: The most recent Luxe Reissue, currently in print, featuring updated packaging and high-fidelity reproductions.

**The Modern Printing Process.** While the original 1827–1838 "Double Elephant Folio" used copperplate etching and aquatint finished with hand-applied watercolours, the Peterson "Baby Elephant Folio" (first published in 1981) used the following process:

**Photography of Original Plates:** Abbeville Press obtained special permission to photograph the original hand-coloured engravings from the National Audubon Society's own archival copy of the Double Elephant Folio.

The actual printing was executed by the Toppan Printing Company of Tokyo, Japan, which was then considered one of the world's leaders in high-quality art reproduction.

**Offset Lithography:** The plates were reproduced in full colour using a sophisticated offset process to capture the "fierce detail" and "layered hues" of the hand-coloured originals.

The "Baby Elephant" name refers to the fact that these plates are roughly half the size of the original life-size "Double Elephant" prints (approx. 12" x 15" vs the original 26" x 39")

Colour offset lithography is the most widely used industrial process for high-volume commercial printing. It combines the chemical principle of lithography (oil and water don't mix) with an offset technique, where the inked image is transferred from a metal plate to a rubber blanket before finally reaching the paper.

For color printing, this process typically uses the CMYK model—Cyan, Magenta, Yellow, and Key (black)—to create a full spectrum of colors by layering tiny dots of these four inks.

The process relies on three main cylinders working in a synchronized sequence:

**The Plate Cylinder:** A thin aluminum plate is treated so that the image areas attract oil-based ink while the non-image areas attract water (fountain solution).

**The Offset Blanket Cylinder:** Instead of the plate touching the paper directly, it "offsets" the inked image onto a flexible rubber blanket. This protects the plate and allows for printing on rougher textures.

**The Impression Cylinder:** This steel cylinder applies pressure to push the paper against the rubber blanket, transferring the final image onto the page.

**Arthur Rackham's illustrations** were produced through a multi-layered artistic process and printed using groundbreaking photographic and mechanical technology. He moved away from traditional wood engraving, allowing for more precise detail and subtle colour.

**Pencil Foundation:** He began by lightly blocking in shapes and details using a soft pencil.

**Ink Definition:** He then worked over the pencil with a pen and India ink, carefully defining the "wiry" lines and removing the pencil marks once the ink dried.

**Watercolour Washes:** For colour plates, he applied multiple thin, translucent washes of watercolour to build depth and vibrancy.

**Final "Over-Inking":** Because the printing process sometimes softened detail, he often re-inked the drawings after painting to restore sharp edges.

**Printing & Reproduction.** Rackham's career coincided with the development of photographic reproduction, which revolutionized book illustration by removing the need for a middleman engraver. Instead of being hand-engraved into wood, his drawings were photographed directly, preserving the integrity of his original lines.

**Three-Colour Process:** He favored trichromatic printing, which used colour-separated plates to recreate the delicate half-tones of his watercolours.

**Halftones:** This new technology allowed for grayscale tones, enabling the reproduction of subtle shading that previous methods could not capture.

**Presentation Techniques;** he used tipped in plates and tissue overlays

**Tipped-in Plates:** Because colour printing required specialized glazed paper, these illustrations were printed separately and then manually "pasted in" (tipped-in) to the book after the text was printed.

**Tissue Overlays:** To protect the delicate plates, they were often accompanied by tissue fly-leaves or guards.

### **Doré Illustrations for Milton Paradise lost. 1866 Cassel publication**

The original series for Paradise Lost consisted of 50 individual plates. The illustrations were first published by Cassell, Petter, and Galpin in London. They were released as a "Folio" edition, which was a very large, expensive luxury book format. While the book debuted in 1866, the drawing and engraving process likely spanned several months to a year prior to the release date.

My is folio edition (13 inches). Doré would first create highly detailed, intricate drawings directly onto boxwood blocks. At the height of his career, Doré employed a large team of up to 40 professional block-cutters. These skilled technicians would carefully carve the wood around Doré's lines to create a printable surface. This method was essential for the 19th-century "industrial revolution" of art, allowing for global distribution of high-quality printed reproductions.

Because it was a joint effort, both Doré's signature and the engraver's name (such as Paul Jonnard or Adolphe Gusmand) often appear on the final prints. My edition has engravers' names on.

**Offset lithography** is a massive-scale industrial printing process. It works on the simple principle that oil and water do not mix. Instead of printing directly from a plate to paper, the image is "offset" (transferred) to a rubber blanket first. This creates a sharper image and protects the expensive printing plates from wearing down.

⚙️ **The Three-Cylinder Process.** Modern offset presses use a system of three main cylinders to move the image onto the paper:

**Plate Cylinder:** Holds a thin aluminium plate etched with the image. It is first dampened with water (which sticks to non-image areas) and then coated with oil-based ink (which only sticks to the dry image areas).

**Blanket Cylinder:** A cylinder covered in a flexible rubber "blanket." It rolls against the plate cylinder, picking up the inked image.

**Impression Cylinder:** This heavy steel cylinder applies pressure to the paper as it passes against the rubber blanket, stamping the final image onto the page.

Most full-colour printing uses the CMYK model. The paper travels through four separate "stations," each with its own set of cylinders and its own colour of ink:

Cyan (Blue); Magenta (Pink/Red); Yellow; Key (Black)

By layering tiny dots of these four colours at different densities, the press can recreate almost any colour in the visible spectrum.

**Key Advantages. High Speed:** Can print up to 15,000 sheets per hour.

**Cost-Effective:** The more you print, the cheaper each page becomes.

**Versatility:** The flexible rubber blanket can print on rough surfaces like wood, cloth, or textured paper.

**Consistency:** Produces sharp, clean text and vibrant images across millions of copies.

The term "Offset" refers to the fact that the plate never actually touches the paper! This indirect transfer is what makes the process unique compared to older methods like letterpress.

Guide: <https://meyers.com/meyers-blog/how-does-offset-printing-work-an-in-depth-guide/>