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Anaglyph Lantern Slides

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Recently I was shown something I had never seen or heard of before—single plate anaglyph lantern slides, designed to be projected in 3D (Fig. 1). According to Ray Zone, Wilhelm Rollman may have been the first person to project 3D images in complementary colors, around 1853.¹ However, general credit for the first to project stereoscopic images in anaglyph form goes to Charles d'Almeida in France. In 1858, d'Almeida used two magic lanterns, one with a red filter and the other with a green filter, to project stereoscopic lantern slide pairs by superimposing the two images on a screen. The audience wore matching red and green glasses to view the three-dimensional image. While Zone described other methods of stereoscopic projection that followed d'Almeida, using mechanical alternating shutters (Rateau, France/Britain, 1897), alternate frame optically printed filmstrips (Grivolos, France, 1901), and even early polarization (Anderton, Britain, 1895), the method of projecting an actual anaglyph lantern slide in a single projector seems to be conspicuously overlooked in the stereoscopic literature. So, seeing and holding an actual anaglyph lantern slide was quite a revelation.

The lantern slides were labeled "Procédé Tauleigne Mazo" (Process Tauleigne Mazo). J.A.B. Tauleigne and Elijah Mazo were photographic inventors in France who developed a three-color photographic process, which is mentioned quite a few times in online literature. E. Mazo was also an optician, photographer, and camera manufacturer, located at 8 Boulevard Magenta, Paris, France. In addition, research provided by Kim Timby revealed that E. Mazo produced a catalog titled (English translation) "E. Mazo: Manufacturers of Accessories, Devices and Views for Projection". Catalog No. 46, for the years 1910 and 1911, lists series of ready-made anaglyphic lantern slides for sale. The catalog states (English translation): "These views for stereoscopic projection use the system created by Mr. Abbot Tauleigne, on the anaglyph principle of Mr. Ducos du Hauron."² The views are placed in a single lantern projector and projected on ANY screen. The depth is perceived by all of the spectators without exception, provided that they observe the image projected on the screen by means of a "vision selector" (Vision selector being an early description of 3-D glasses). Mazo part-

nered with Tauleigne to improve upon the Dr. Taube mordant dye process which removed the silver-iodide, thereby leaving a transparent dye image, a process that produced strongly colored photographs. It apparently also was perfectly suited to making anaglyph lantern slides.³



Fig. 1. Anaglyph lantern slide designed to be projected from a single lantern to produce a 3D image when viewed through special colored glasses. See p. 23 for a color version.

An article in the *British Journal of Photography* for 1910 gives a detailed description of the process for making anaglyphic lantern slides, written by Mazo himself:

THE TAULEIGNE-MAZO STEREO PROJECTION AND THREE-COLOUR PROCESSES.

(Since referring in the last issue of the "Colour Photography" Supplement to the trichomy process of Mr. A. Tauleigne, we have received

from Mr. E. Mazo, the well-known Paris constructor of optical apparatus, the description of the process as it will shortly be placed upon the market. Mr. Mazo has collaborated with Mr. Tauleigne, and the method, as now offered for the purposes of amateur photographers, is the result of their joint labours. The following is the abridged text of Mr. Mazo's communication. -- Eds. "Colour Photography" Supplement.)

The two processes are distinct. One is concerned with the production of stereoscopic relief on the lantern screen, the other with colour photography from nature. Both are patented in Great Britain and other countries, and both are based upon the well-known principles first enunciated by Ducos du Hauron, namely, that the blending of complementary colours, as embodied in the "anaglyph" method, and that of combining three primary colours.

Just as in the case of the Autochrome and Omnicolore plates, the projection of which was described by Du Hauron as long ago as 1868, both processes have long known to be possible, and, indeed, been practised by amateurs of more serious inclinations until the very great technical difficulties became too obvious.

Misters Tauleigne and Mazo have, however, found that the process can be very greatly simplified by the production of a silver image, which directly fixes the saline colour. It would be well to emphasise first the difficulties involved in the older processes, from which will be seen the superiority of the new process as regards means of working.

Stereoscopic Lantern Projection.

For success in obtaining stereoscopic relief on the lantern screen the principles of stereoscopy must be kept in mind. Just as in nature, objects are seen in stereoscopic relief when two images, one from each eye, are simultaneously transmitted to the brain, so, on the lantern screen, the stereoscopic relief will be observed when there are projected on the screen the two pictures of the stereoscopic pair, and when each eye is allowed to perceive only one picture.

This may be done by staining the right-hand picture red, the left-hand picture green, and placing before the right eye of the observer a green filter and before the left eye a red filter. When projection is thus viewed the stereoscopic relief of the original subject is seen.

According to the Mazo process, all that is necessary is to make positive transparencies from the stereoscopic negative. The images in these positives are then converted, one into red and the other into green, the silver image itself being subsequently removed, so that the final result is a perfectly clear and transparent image in colour only. These two transparencies are placed one above the other and projected together with the one lantern, the spectators being provided with a pair of tinted glasses for viewing the relief effect.

As previously practised, this process has usually necessitated the use of two lanterns [Fig. 2], the lenses in which were provided, one with a red screen and the other with a blue or green screen. The adjustment of the pictures on the screen was a matter of considerable difficulty, whilst, owing to the presence of a black silver image and also of a coloured screen, a very powerful light was necessary. Further, it was difficult to register the two pictures in the lantern and on the screen to such an extent that the process could be employed only for a very small number of views in succession.

By taking advantage of the new method by which the silver image is converted into a transparent dye image, the projection on the screen is of great brilliancy, and as the two positives may be placed one upon the other, in the lantern, only one of the latter is necessary, and the positives also being adjusted once for all when placed in the lantern, there is no delay in registering each picture at the time of the actual exhibition.⁴

At this point the rest of the article is about a simplified three color process developed by Tauleigne and Mazo which uses the same technique for creating transparent colored lantern slides as the stereoscopic lantern slides method, but in the three primary col-

ors, and in perfect registration, to provide a full color image in a way that was simpler than other methods of that time.

My "modern interpretation"

By using one of the techniques Tauliegné had developed for their three-color glass plate process, they converted the separate left and right eye lantern slide plates into transparent green and red image slides. The process made the slides more transparent, as the black and white silver image had been removed in their process, leaving just a single color transparent image (red or green). By then sandwiching the two slides together and taping them to form a single slide for projection (Fig. 3), an anaglyph slide could be projected with a single magic lantern projector.

This eliminated the need for two projectors, each fitted with red and green filters, and, at the same time, provided a much brighter image from a single projector. In retrospect this idea seems so obvious, and such a great improvement, that it is surprising that it has remained unmentioned (as far as I have been able to find) in later literature on the subject of stereoscopy. An Internet search shows that, while rare, these anaglyphic lantern slides do occasionally show up in online auctions.

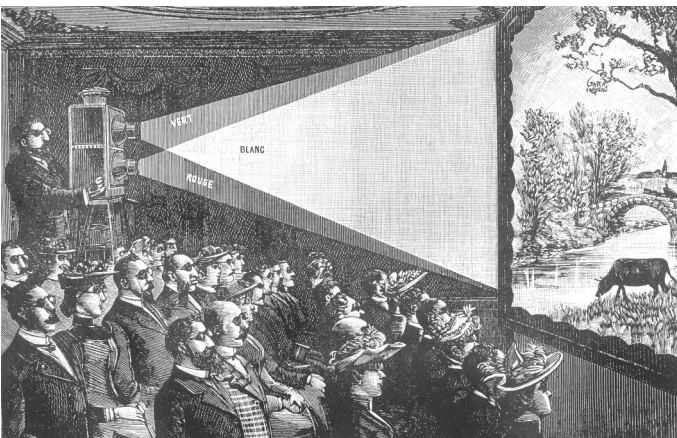


Fig. 2. Projection of 3D images using a biunial lantern with red and green filters.

The Léon Gimpel Stereo Autochrome Process

While researching Tauleigne and Mazo, Kim Timby in Paris sent information about an anaglyphic stereo autochrome process:

I also remember that a French photographer named Léon Gimpel made anaglyphs on autochrome plates at some point. I'm assuming his



Fig. 3. Anaglyph lantern slide made by sandwiching two photographic positives, one dyed red and the other green to enable 3D projection with a single lantern equipped with red and green filters. **See p. 23 for color version.**

idea was to project them. I just went to check some photocopies I made when working on Paris in 3D. Gimpel wrote in his journal for 1910 (my loose translation):

An article in a photographic journal about "composite images" inspired me to do something similar with Autochrome plates. By "composite image" I mean the superimposition on the same surface (glass, film or paper) of several different images printed in different colors. Seen directly, these superimpositions of course only show an unpleasant confusion, but when they are viewed through properly chosen colored filters one can distinguish each image separately, because of the optical elimination of the others. On April 28th, inspired by these experiments, I made my first anaglyphs on Autochromes.⁵

Gimpel did much more with this in the 1920s.

Kim also referenced a completed online auction for a Gimpel anaglyph autochrome of the moon dated March 1920 and presented as a 9 x 12 cm lantern slide. The auction site reported that in 1924, Léon Gimpel and Emile Touchet introduced a relief projec-

tion method using stereoscopic slides, taken with a camera subsequently marketed by Gaumont. The previous year Gimpel had made anaglyph pictures—anaglyphos from the Greek, "carved in relief"—from shots of the Observatoire de Paris; eight of them appeared June 28, 1924 in *L'Illustration*, accompanied by two-color glass-
es.

The moon image was auctioned by SVV Millon & Associés on November 10, 2011 and sold for 10,000 Euros! In the Millon auction catalog there were a total of nine anaglyphic stereo autochrome images shown. While it makes sense that the Autochrome process was used to make anaglyph lantern slides, these are also quite a 3D rarity! The images may be seen in color in the online version of the catalog, which may be found at:

<http://www.millon.com/html/index.jsp?id=10668&np=7&lng=fr&npp=20&aff=1&r=>

I find it interesting that while the moon lantern slide was described as anaglyphic Autochrome by Léon Gimpel, it was also stated to be obtained from a negative that was made with the Tauleigne-Mazo process.

While a stereo autochrome has the advantage of being made in color on one plate, versus two sandwiched plates in the Tauleigne-Mazo process, autochromes have the disadvantage of being very dense and requiring a lot of light, making them much less desirable for lantern slide projection.

Acknowledgements

This article is dedicated to Ray Zone, who had an encyclopedic knowledge of 3D history, and who's spirit hovers over my shoulder whenever I write on historical 3D subjects. Special thanks to Susan Pinsky, my muse, my spellchecker, my Editor, and my partner in life. Also special thanks to Claudia Kunin, Anaglyph Artist and friend, who showed us her collection of Tauleigne-Mazo Anaglyph lantern slides that inspired this article. And a final thanks to Kim Timby of Paris, France, who provided research, information, and translation from French sources.

Notes and References

1. Ray Zone, "Ghosts in Relief: Stereoscopic Projection, Magic Lanterns, and the Movies." *The Magic Lantern Gazette* 19 (1): 17-24 (Spring 2007).
2. For more on Ducos du Hauron, see Zone, "Ghosts in Relief" (ref. 1).
3. <http://tinyurl.com/nb7qyq7>
4. "THE TAULEIGNE-MAZO STEREO PROJECTION AND THREE-COLOUR PROCESSES." *The British Journal of Photography*, March 10, 1910 (Supplement), pp. 22-24.
5. Presented at the Société française de photographie May 19; see their

Bulletin no. 6, June 1911 and the *Photo-Revue* no. 29, July 16, 1911. The reference for Gimpel's journal/memoires (there is a picture on page 124 of *Paris in 3D*) is "Quarante ans de reportages photographiques". It's a handwritten document in the collections of the Société française de photographie. The passage quoted is on page 51.

This article is a modified version of one that originally appeared in *Stereo World* for March/April 2016 and is reproduced here with permission of the author and publisher.

The Research Page provides short summaries of recent scholarly research related to magic lanterns in a variety of disciplines. For a comprehensive bibliography of research on the magic lantern, see: https://www.zotero.org/groups/magic_lantern_research_group/items

Andy Uhrich. 2015. "Beautiful to the eye, pleasing to the ear": Educational performance in *A Pictorial Story of Hiawatha* (1904-1908). *Early Popular Visual Culture* 13:256-275.

This well researched article provides a comprehensive look at a program on Hiawatha given on the summer Chautauqua circuit in the early 1900s by Katherine Ertz-Bowden and Charles Bowden. The program, which combined colored lantern slides with motion pictures, was based on a play produced by Ojibway Indian actors. The show toured mostly in the upper Midwest for several years, with Katherine providing the lecture narrative and Charles operating the stereopticon. The Bowdens' show also was discussed and illustrated in: Terry Borton. 2015. The professional life of "magic lantern" illustrated lecturers. With introductions to most professionals performing from the 1890s to the 1920s. Part 2. *The Magic Lantern Gazette* 27 (2/3) (Summer/Fall 2015):3-37. The current article also briefly discusses the Bowdens' lantern slide and movie recreation of the Oberammergau Passion Play, which most likely employed lantern slides made by the official German photographer, who held sole rights to photograph the play itself [see: Kentwood D. Wells. 2007. The Oberammergau Passion Play in lantern slides: The story behind the pictures. *The Magic Lantern Gazette* 19 (1):3-16]. Using a rich trove of archival material, Uhrich analyzes the Bowdens illustrated lectures, which combined showmanship with an educational mission. The article makes a major contribution to our understanding of the professional lives of illustrated lecturers in the early 20th century.



Color versions of Fig. 1 (top) and Fig. 3 (bottom) from "Anaglyph Lantern Slides."