

IMAGE

Journal of Photography of the George Eastman House

March, 1952

Vol. 1, No. 3

THE AMERICAN STEREOSCOPE

By Oliver Wendell Holmes

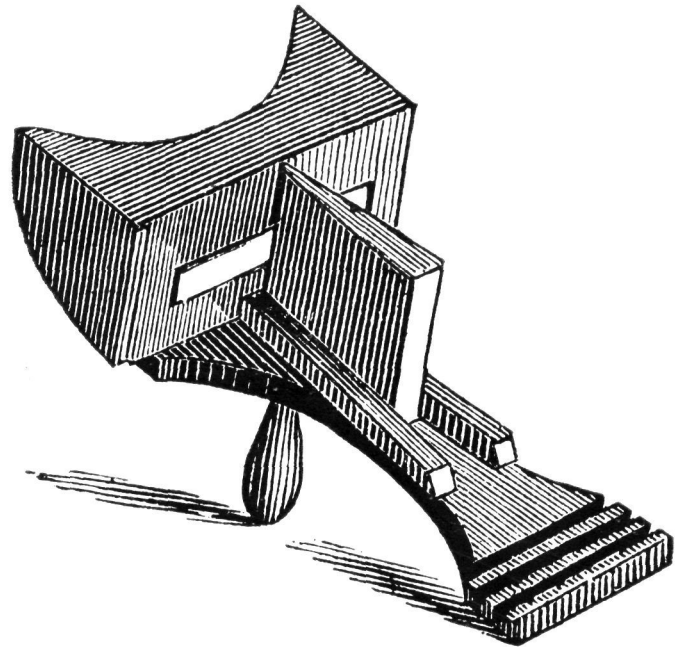
From *The Philadelphia Photographer*, January, 1869

THE *British Journal of Photography* has had two articles lately, relating to the "American Stereoscope." The figure they give shows that the instrument referred to is a copy of the one which was first made in Boston, and of which I shaped the primitive pattern with my own hands. I have thought that the history of this stereoscope, which has been known here with my name attached to it, for half a dozen years or more, might interest your readers. There was not any wholly new principle involved in its construction, but, it proved so much more convenient than any hand-instrument in use, that it gradually drove them all out of the field, in great measure, at least so far as the Boston market was concerned.

This simple stereoscope was not constructed by accident, but was the carrying out of a plan to reduce the instrument to its simplest terms. Two lenses were necessary, and a frame to hold them. I procured two of the best quality, and cut a square frame for them out of a solid piece of wood. A strip of wood at right angles to this was required to hold the pictures. I shaped one, narrow in the middle, broad at both ends; at one end to support the lenses, at the other to hold the stereographs, which were inserted in slots cut with a saw at different distances. A partition was necessary, which I made short, but wedge-shaped, widening as it receded from the eye. A handle was indispensable, and I made a small brad-awl answer the purpose, taking care that it was placed so far back as to give the proper balance to the instrument, — a point which bungling imitators have often overlooked. A hood for the eyes was needed for comfort, at least, and I fitted one, cut out of pasteboard, to my own forehead. This primeval machine, parent of the multitudes I see all around me, is in my left hand as I write, and I have just tried it and found it excellent.

I felt sure this was decidedly better than the boxes commonly sold, — that it was far easier to manage, especially with regard to light, and could be made much cheaper than the old-fashioned contrivances. I believed that it would add much to the comfort and pleasure of the lover of stereoscopic pictures. I believed, also, that money could be made out of it. But, considering it as a quasi scientific improvement, I wished no pecuniary profit from it, and refused to make any arrangement by which I should be a gainer. All I asked was, to give it to somebody who would manufacture it for sale to the public.

There did not seem to be much chance of anybody's making a fortune by it, at first, certainly. I showed it to one or two dealers in Boston, offering them the right to make all they could by



OLIVER WENDELL HOLMES, American writer, whittled his stereoscope from wood. His design was cheaper and better than viewers imported from Europe, quickly replaced them.

manufacturing the pattern, asking them nothing—not even one for my own use. They looked at the homely mechanism as a bachelor looks on the basket left at his door, with an unendorsed infant crying in it.

In the meantime, Mr. Joseph L. Bates, to whom I had shown one of my first models, and who had one made by my pattern, to my order, had been thinking over the matter pretty seriously, and come to the conclusion that there was something in my skeleton stereoscope. He went so far, at last, as to make a few of them on his own account, and found purchasers for them. I was very glad to have somebody get profit and pleasure from my contrivance, and made him quite welcome to whatever there was to be gained by its manufacture. He had had the sagacity to foresee that there was a future for it, and I should have been glad if he could have enjoyed the monopoly of furnishing it longer than he did. From his establishment, have come certain improvements of much value, particularly the sliding arrangement for adjusting the focus, in place of the original slots, or narrow grooves, and the method of holding the pictures. These added a little to the expense, but a great deal to the convenience.

The last improvement is my own: that of fitting the hand instrument to the ordinary stand by a dovetail groove, so that it can be shipped or unshipped, according to the way in which we wish to use it, by a single movement.

CASE-MAKER BRADY

BRADY, whose collection of photographs of the Civil War has become legendary, first became interested in daguerreotypes when he began to supply cases to the trade. The following letter, in the Boyer Collection at Eastman House, was written to Albert Sands Southworth of Boston, the year before Brady opened his Daguerrean Miniature Gallery on Broadway, New York. We reprint it verbatim.

New York, June 17, 1843

Mr. Southworth

Sir I beg leave of communicating these few lines soliciting your attention I being informed by L. Champney and several of your friends that you are one of the most successful prof of daguerreotype and doing the most extensive business in Boston and invariably use a great number of miniature cases I have been engaged some time past in manufacturing miniature cases for some of the principal operators in this city and recently in business for myself and anxious for engagements I have got up a new style case with embossed top and extra fine diaframe This style of case has been admired by all the principal artists in this city If you feel desirous to see my style of cases if you will favor me with an answer I will send them by Horse Express if my style of cases should suit you I can supply you on reasonable terms.

Yours M B Brady

162½ Fulton near Broadway opposite St. Pauls Church

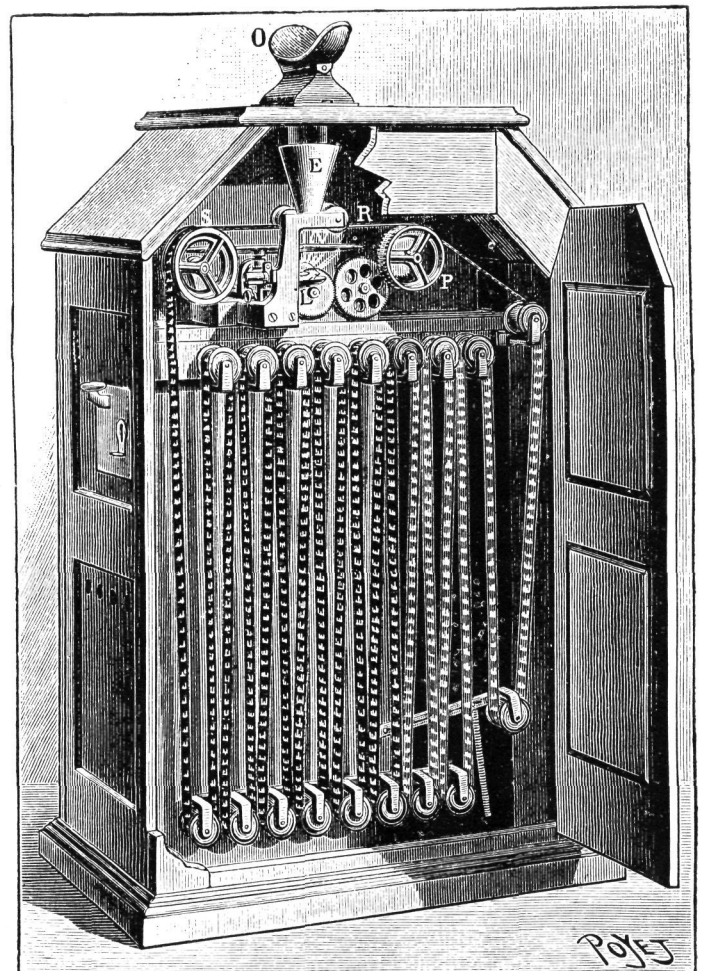
MR. EDISON'S KINETOSCOPE

EDISON'S peep-show kinetoscope was short lived. Introduced in 1894, it began to be replaced in 1895 by several different kinds of projectors, which threw moving pictures on a screen. The Eastman House does not own one of these pioneer cabinet viewers, and the following description is reprinted from the *Scientific American* for November 10, 1894, in the hope that one of our readers may locate a kinetoscope for our collection. The article originally appeared in the *London Times*.

This instrument is to the eye what Edison's phonograph is to the ear. The moving and, apparently, living figures in the kinetoscope are produced in the following manner: Mr. Edison has a stage upon which the performances he reproduces are enacted. These performances are recorded by taking a series of 43 photographs in rapid succession, the time occupied in taking them being one second only. Thus every progressive phase of every single action is secured, and the photographs are successively reproduced on a film of celluloid. When this film is passed before the eye at the same rate of speed as that at which the photographs were taken, the photographically disjointed parts of a given action are united in one complete whole. Thus supposing a person to be photographed taking off his coat—as is done in one case—the successive views representing the phase of action at every forty-third part of a second are joined up, and the complete operation of taking off the coat is presented to the eye as it would appear in reality.

The apparatus in which the reproduction takes place is a cabinet about 4 ft. high, 2 ft. wide, and 1 ft. 9 in. deep. It contains the celluloid film band, the apparatus for reconstructing the disjointed views, and a small electric motor for driving the apparatus. The chief detail of the mechanism is a flat metal ring having a slot in it, which makes about 2,000 revolutions per minute. The film passes rapidly over the ring, beneath which is a light. The spectator looks through a lens on to the film, and every action recorded on it passes under his view. Ten machines were shown, in which the most rapid and complex actions were faithfully reproduced. One scene represents a blacksmith's shop in full operation, with three men hammering iron on an anvil, and who stop in their work to take a drink. Each drinks in turn and passes the pot of beer to the other. The smoke from the forge is seen to rise most perfectly. In another view a Spanish dancer is shown going through her graceful evolutions, as is also Anna Belli in her serpentine dance. There is likewise a wrestling scene and a cock fight, in which feathers are seen to fly in all directions. All the features of an original stage production are given, of course on a small scale, but possibly only for the present, for Mr. Edison promises to add the phonograph to the kinetoscope and to reproduce plays. Then by amplifying the phonograph and throwing the pictures on a screen, making them life size, he will give the world a startling reproduction of human life.

ENDLESS FILM was driven continuously in Kinetoscope across spools so that pictures on it moved about 40 times per second. Whirling slotted disc, V, allowed viewer to see pictures through lens, E, at instant they were centered over light, L.





PORTE ST.- DENIS, PARIS. From an album of photographs published in Lille, France, by Blanquart-Evrard in 1851. His technique, for years a secret, gave prints of brilliant quality.

BLANQUART EVRARD

TODAY photographers almost always use a developing-out paper for making prints from their negatives. This sensitive material is given a short exposure and the latent image is made visible by the process of developing. The technique first became universal at the end of the 19th century with the introduction of papers made light sensitive with gelatin bromide.

Before that invention, photographers used almost exclusively printing out paper, so called because the image becomes visible during exposure to sunlight. The common technique was but a modification of the silver chloride paper which Henry Fox Talbot announced in 1839. "I select," he said, "paper of a good firm quality and smooth surface. I dip it into a weak solution of common salt ... I then spread a solution of nitrate of silver on one surface only and dry it at the fire. When dry, the paper is fit for use." Talbot placed the paper in contact with a negative, exposed it to sunlight until an image appeared, then fixed it in sodium thiosulphate. The resulting picture was of a rich, reddish brown color.

Printing by this technique was time consuming. Thomas Sutton, in his *Calotype Process*, 1855, said that "in the sun, a print may be obtained in from four to ten *minutes*, according to the strength of the negative; while in the shade, or in diffused daylight, it might require many *hours*."

The first major improvement in Talbot's technique was made by Louis Désiré Blanquart-Evrard, a French chemist. He coated paper with beaten-up white of egg, to form a smooth surface which would give prints with maximum detail. His albumen paper, which he first described in 1847, became a standard article right up to the 1890s, when it gave way to gelatin and collodion papers.

Blanquart-Evrard's second invention was ahead of its day. He was the first to make developing-out paper, which he used with great success. Talbot had reduced the exposure needed for making negatives by the process of development. Blanquart-Evrard adopted this principle for making prints. The unpleasant

olive-green silver deposits of Talbot's calotype negative paper he altered to deep blacks by chemical toning.

The result of this improvement was the opening in 1851 of a Photographic Printing Establishment at Lille, where Blanquart-Evrard employed farm girls to print from paper negatives. Thomas Sutton, an English photographer and writer, witnessed "the production of 250 prints from the same negative, complete, in less than two hours. The exposure to light under a negative was almost instantaneous, and fifty prints were developed together in the same dish."

A quantity of prints, neatly mounted on gold-bordered cards, came from the Photographic Printing Establishment. They were sold separately or in albums. Perhaps the masterpiece of the factory was the folio volume *Egypte, Nubie, Palestine et Syrie* of 1851, containing a hundred prints from negatives taken by Maxime Du Camp.

"The process," Sutton wrote, "was never popular, partly because the public preferred the glaze of albumen to the unobtrusive effect of a matt print, and partly because the process of development yields on the rough surface of paper a somewhat ragged and inferior definition. There is, however, an artistic beauty in good developed prints which has not been equalled by any other process."

Prints by Blanquart-Evrard in the George Eastman House Collection are all that Sutton claimed. They further prove that the technique had the virtue of permanence, for the hundred-year old photographs are so perfectly preserved that they seem to have been made yesterday. One can only regret that Blanquart-Evrard's technique did not become universal.

FORGOTTEN PIONEERS

I: MUNGO PONTON (1802-1880)

ON May 25, 1839, members of the Society of Arts of Scotland gathered to hear their fellow member, Mungo Ponton, present a report on "A Cheap and Simple Method of Preparing Paper for Photographic Purposes." The air was full of the new miracle of photography that spring. On January 7 Daguerre's process was announced, but the secret was not to be published for eight months. In February, Fox Talbot published full technical details of his "photogenic drawing" process. Almost every succeeding week brought the announcement of some new way of making pictures by the action of light. Most of these claims, when analyzed, proved to be modifications of Talbot's invention. Mungo Ponton was one of the few pioneers, however, who could claim that he had something new.

He used potassium bichromate instead of silver salts to make paper light sensitive. His technique was utterly simple: he merely soaked a piece of ordinary paper in a saturated solution of the chemical and dried it quickly at the fire. In this state, the paper was yellow. When it was exposed to light, it turned deep orange. Leaves, lace, or other objects laid on the paper during exposure left their silhouettes upon it.

But exposure to light did more than change the color of the potassium bichromate spread upon the paper. It made it insoluble in water. To fix his contact prints from further light action, Mungo Ponton simply washed away the unexposed, yellow chemical.

Compared to Talbot's silver chloride paper, Ponton's bichromate process was much inferior. The paper was not sensitive enough to record a camera image, and he limited its use to "taking drawings from dried plants, or for copying prints, etc." Left at this stage, Ponton's discovery would be considered today merely a curiosity.

But as so often happens with inventions, Ponton, in his desire to find a cheap and simple photographic technique, discovered a principle which others developed. Potassium bichromate not only changes its *own* solubility on exposure to light, but imparts this property to gelatin, gum or glue. Mixed with a pigment, bichromated colloids are used in making carbon, carbro and gum prints. The relief image, formed by clear bichromated gelatin, will absorb dye in proportion to the highlights and shadows of a photographic negative; paper pressed against the matrix will absorb the dye. The gelatin may be spread on metal plates. After exposure beneath a negative, the unhardened gelatin can be dissolved in water to lay bare the metal, which can then be etched. The result is an intaglio plate which can be inked and printed. Indeed, the extensive use of potassium bichromate in the graphic arts made true Mungo Ponton's hope, expressed in his 1839 publication, that his method might "be found of considerable practical utility in aiding the operation of the lithographer."

Eastman's Detective Camera

In the first issue of *Image*, a description of the hand camera designed in 1886 by George Eastman was pieced together from the patent specifications and his correspondence, as no example had been located. Apparently the "detective camera," as he called it, was the first camera designed by Eastman to accept rollable sensitive material, and it may be considered as the prototype of the more famous Kodak camera of 1888.

We are glad to report that an example of this experimental camera has been found in the extensive collections of the Smithsonian Institution, Washington, by Alexander J. Wedderburn, the Curator of Photography.

BOOKS

Masterpieces of Victorian Photography, by Helmut Gernsheim.
Phaidon Press, London, 1951, 107 p.

On the occasion of the Festival of Britain in 1951, Helmut Gernsheim organized an exhibition from his collection at the Victoria and Albert Museum in London. In addition to a paper-covered illustrated catalogue, this bound quarto volume with seventy-two full page illustrations puts on record one of the most outstanding exhibitions of early photography ever to be held.

Mr. Gernsheim did not limit his choice to well known photographers, but included the work of many now-forgotten camera-men, so that we are able to view the Victorian period from a

fresh standpoint. The photographic level of work produced a hundred-odd years ago is — within its technical limitations — outstanding. In the late 1850s, for example, George Washington Wilson was able to photograph traffic in crowded city streets. It is good to see the work of so many Victorians reproduced: Francis Frith, who traveled to Egypt, J. Thomson, whose series of London street types antedate the documentary movement by many decades, Robert MacPherson, an architectural photographer who specialized in the monuments of Rome. Biographical data, not to be found elsewhere, gives the book special value as a reference text.

Siegeszug der Photographie, by Erich Stenger. Heering-Verlag, Seebuck am Chiemsee, No. 1950, 279 p.

Der Geschichte der Kleinbildkamera, bis zur Leica, by Erich Stenger. Umschau-Verlag, Frankfurt am Main, 1949, 76 p.

Erich Stenger, the German historian of photography, has revised his history first published in 1939 and given it a new title: *The Triumphal March of Photography*. Like the earlier edition, the book is encyclopedic in character, tracing the development of photography in almost every field of human endeavor. He has added many more illustrations to his original choice, drawn largely from his own collection. The result is a wealth of illustrative material which will be found helpful by the student.

The History of the Miniature Camera was written by Erich Stenger for the 100th anniversary of E. Leitz, the optical manufacturers who introduced the Leica camera in 1924. The book is not, however, limited to this particular camera, but traces the development of small cameras from Fox Talbot's day to the present. The book is beautifully printed and illustrated with line drawings of typical cameras and equipment.

ABOUT IMAGE

In barely more than a century, photography has become recognized as the most facile means of communication known to man. Looking back on the early beginnings of this new art, it is at once remarkable how far we have been able to push the scope of the camera, and how excellent, within its limitations, was the work of the pioneers. The purpose of the George Eastman House, as defined in the charter granted to it by the University of the State of New York, is to show the progress of the art and science of photography. Our primary method of fulfilling this mission is to exhibit apparatus, photographs and moving pictures. But much of the story of photography can be told only in words, and it is the aim of *IMAGE* to publish articles which will reinforce our exhibitions and which will reach a larger audience than those thousands who visit us in Rochester. The articles will be brief; readers who wish further information are cordially invited to write to us. Material which appears in these pages may be reprinted with credit to the George Eastman House.

IMAGE, Journal of Photography of the George Eastman House, 900 East Avenue, Rochester 7, New York. Editors: Oscar N. Solbert, Beaumont Newhall, James G. Card. Associate Editor: Marion N. Gleason. Editorial Assistants: Esther L. Kominz, Charles Schaufelberger, Warren C. Stevens, Erwin J. Ward. Printed in U. S. A.