

IMAGE

Journal of Photography of the George Eastman House

April, 1952

Vol. I, No. 4

PORTRAIT OF THE INVENTOR

THE answer to the question, "who invented photography?" is complex. Not one man, but a group of men have brought us over the years the technique we know as photography. Books have been written, analyzing the contribution of each pioneer. But no writing can answer the question as graphically as this portrait, prepared by D. A. Spencer of Kodak, Ltd. "The picture was made by photographing portraits of the better-known names in the history of photography," Dr. Spencer writes, "choosing as far as possible portraits showing the same aspect of the face. These were then enlarged to make positive transparencies, in which the distance apart of the eyes was the same. These enlarged transparencies, each of which was a ghost image, were then assembled in register, using the eyes as registration points, and the composite sandwich illuminated from behind and photographed to produce the negative of the inventor."

The following pioneers appear in this composite portrait.

Nicéphore Niépce (1765-1833) who made a direct positive before 1829.

William Henry Fox Talbot (1800-1877), who invented the paper negative process in 1835.

Louis Jacques Mandé Daguerre (1787-1851) who invented the daguerreotype in 1837.

Joseph Bancroft Reade (1801-1870) who claimed the first use of sodium thiosulphate for fixing in 1837.

Sir John Herschel (1792-1871), who discovered sodium thiosulphate in 1819, and coined the word "photograph."

Josef Petzval (1807-1891), who designed the first lens for photographic purposes in 1840.

Niepe de St-Victor (1805-1870), who invented the albumen process, the first successful glass negative technique, in 1848.

Frederick Scott Archer (1813-1857), who invented the collodion or wet plate process in 1851.

Sir Joseph William Swan (1828-1914), who invented carbon printing by transfer in 1864.

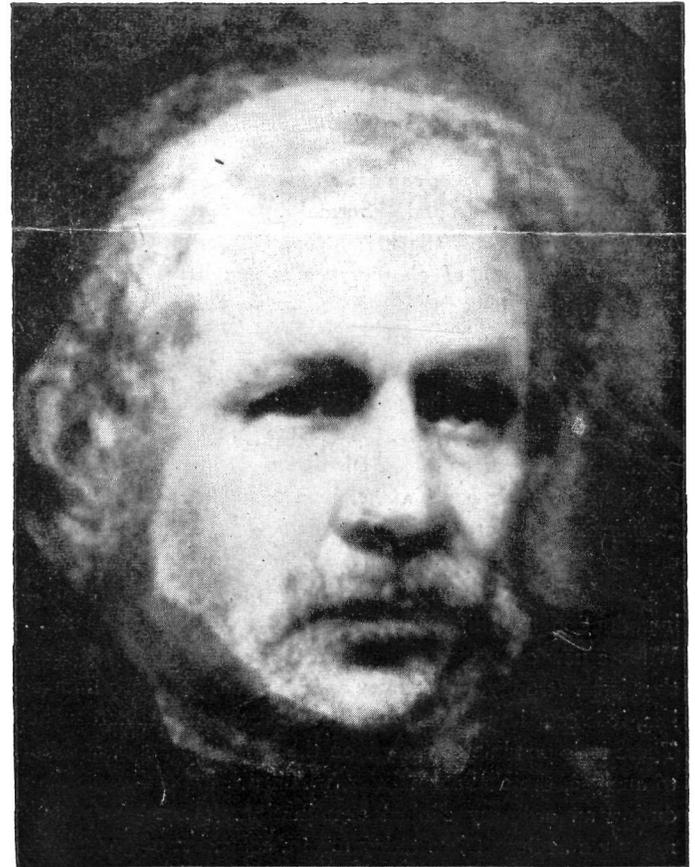
Richard Leach Maddox (1816-1902), who invented gelatino-bromide dry plates in 1871.

Hermann Wilhelm Vogel (1834-1899), who discovered the principle of making photographic emulsion sensitive to all colors in 1873.

George Eastman (1854-1932), who perfected roll film and invented the Kodak system in 1888, which brought photography to all.

Charles Vero Driffield (1848-1915) who, with Ferdinand Hurter (1844-1898) discovered the mathematical relationship between negative exposure, development and density in 1890.

Copyright 1952 by The George Eastman House, Inc.



"THE INVENTOR;" a composite portrait made by D. A. Spencer to answer the question, "Who Invented Photography?"

EARLY PHOTOGRAPHIC MEDICAL ILLUSTRATIONS

The potential usefulness of photography to medical practice and research was recognized as soon as the Daguerre process was announced in 1839, and almost immediately the medical profession began to use the new tool. Laboratory specimens could be microphotographed successfully, and before long plates from these daguerreotype studies began to appear in medical publications as illustrations. But early clinical photographs of patients showing case-histories are rare.

Probably the traditional darkness of the sick room of that period required faster lenses and more sensitive materials than were then available. However, patients who could walk or be carried to an adequately lighted studio, perhaps contrived in the hospital or doctor's office, were photographed. Consequently

the earliest clinical illustrations made from photographs are in obstetric, orthopedic or psychiatric publications.

Photographs of patients were exhibited as illustrations to lectures before the Obstetrical Society of London. A lithograph of one of them appears in the 1860 publication of the society.

Cases in Orthopedic Surgery, 1868, by Dr. Buckminster Brown, one of the great orthopedic surgeons in America at that time, contains illustrations from photographs. He comments on them: "The figures on the accompanying plates are photographic representations of most of the cases described in the preceding paper. They are copied with an accuracy only attained by that wonderful art which permits the subject to stamp its own image."

In 1877 another American orthopedic specialist, Dr. Sayer-Lewis, in his *Spinal Disease and Spinal Curvature*, made lavish use of photographic clinical studies. Three sets of four pictures, folded accordion-fashion, show the "before-during-and-after" treatments of each case.

Psychiatry found the camera an ideal tool for the study and diagnosis of psychotic and abnormal personality types. Charles A. Darwin indicated the illustrative possibilities of the new science by the use of photographs in his *Expression and the Emotions*, 1872. He says of the photographs: "They are faithful copies and are much superior for my purpose to any drawing, however carefully executed."

At La Salpetriere, the great French hospital for the insane, photography became a recognized diagnostic tool for psychiatry. Under the supervision of the Director of the institution, the distinguished pioneer psychiatrist, Jean Martin Charcot, a photographic department was founded. Beginning in 1888 a large volume containing many photographic plates, *Nouvelle Iconographie de la Salpetriere*, was published every year until 1918. In the introduction the editors describe their clinical procedure: ". . . When a new case presents some disorder of objective interest; that is, an atrophy, a deformity or an unusual posture or mannerism, it is sent immediately to the Department of Photography. There it is possible to record on the sensitive paper, and then to analyse, these abnormalities, which are impossible to detect during an ordinary clinical examination. These photographic negatives at Salpetriere today form a collection of great importance."

The same year, in *The Amateur Photographer*, this prophecy was made. "Its [photography's] use for pathological study in medicine seems almost unlimited." The wealth of clinical photographic illustrations which contribute so much to the value and vitality of modern medical literature indicates how well photography has fulfilled that prophecy.

AFIELD WITH THE WET PLATE

By Valentine Blanchard

From *The Practical Photographer*, 1891

Valentine Blanchard was an extremely successful landscape photographer in England during the 1860s; his photographs of famous scenes and historic buildings were sold by the thousand.

In 1891 he recalled for younger photographers some of the routine problems that faced the wet-plate worker in the field. His account is one of the most vivid of the reminiscences of the "good old days" which filled the photographic press in the

years following the introduction of gelatin dry plates. The following is a condensation of the original article.

Let us go back thirty years, and in imagination prepare for a short photographic campaign in pursuit of the picturesque. Even for pictures of small dimensions the impedimenta assumed dimensions almost sufficient to fill a small wagon. The whole of the work had to be done in the field, and therefore everything necessary for the completion of the negative had to be carried; and woe to the careless photographer who omitted the "roll call" of apparatus before starting!

We are ready for a start. The day is a stormy one at the seaside. Just the day for grand cloud and wave effects. Some shelter must be found for the tent somehow; for it carries too much canvas to stand the force of such a gale in the open. At length the tent is comparatively safe, so we proceed to put everything in order inside. The various bottles are in their proper places. The nitrate of silver bath is put into its light-tight well. The water tank is put outside, and a flexible tube carries the contents into the interior. Before we start we must have fairly liberal supply of water. This may mean a journey of half-a-mile, for salt water will not do. We struggle with the ample folds of the drapery of the tent, and we are safely tucked inside. The bath was capricious, and you never knew how it was going to act. The [glass] plates had been carefully cleaned and dusted beforehand, and wisely so, for the air is heavy with salt spray. The stopper had not blown out of the collodion bottle during its jolting journey to the scene of action, so we are able to pour the contents over the plate—and sometimes up our sleeves as well—and after waiting till the film has properly set, immerse it in the nitrate bath. So far all has gone well. The plate is carefully drained, and inserted in the darkslide, and we emerge half suffocated from our black hole. The camera is on its tripod, and we are ready. Our journey is probably down the face of a cliff, for we had to seek shelter for the tent some distance from the shore. Now we feel the force of the gale, and the legs of the tripod have to be well spread in order to keep the camera firm. Focusing is difficult, for the velvet prefers to cover the lens instead of the head, but the moment is chosen and the exposure made. A hard climb up the cliff brings us back to the tent, once more muffled up we proceed to develop, and are perhaps rewarded with a fairly presentable negative.

Can wasps have been photographers in some former world? The interest in photographic proceedings displayed by them is remarkable. The moment the yellow window of the tent is opened an inch, just to admit a mouthful of air to the panting operator inside, as sure as fate in comes one of these gaudy yellow-and-black gentlemen to inspect the proceedings. He evidently thinks the photographer deaf, and comes much too near the ear to be pleasant. Perhaps he is anxious to communicate some tip. His language is distracting and incomprehensible, and so after a time he flies away in disgust only to give place to another of his fraternity the moment the window is once more opened.

In spite of all the fatigue and frequent vexation of spirit, there were compensative joys. After waiting and watching for some particular atmospheric effect, the delight on escaping from the confinement of the suffocating tent to find reward for all the patience in the shape of a successful negative, is an experience known only to the workers in the days of wet collodion.



DRAWINGS of a galloping horse, to be viewed in motion with a phenakistoscope, made 15 years before the Muybridge photographs, by Lieutenant L. Wachter of the French Army.

THE HORSE IN GALLOP

IN 1873 Leland Stanford, Governor of California, engaged the services of a professional photographer, Eadweard Muybridge, to photograph a horse in full gallop. Although Muybridge's first result was commented upon by the press with favor, it was not until 1877 that he secured completely convincing results. This he did by arranging a battery of cameras along one side of a race track, opposite a white wall. As the horse galloped past the cameras, their shutters were released one after the other by electro magnetic control. These first sequence photographs, showing twelve different phases of the gallop, were published internationally and caused widespread comment because they were so unexpected. For centuries painters had shown the horse in gallop with fore feet stretched forward and hind feet thrust backward. Not one of the Muybridge photographs corresponded with this traditional image. The only photograph of the twelve in which all four feet were off the ground at once showed them bunched together beneath the belly of the horse. *The Scientific American* wrote, on October 19, 1878: "Before these pictures were taken, no artist would have dared to draw a horse as a horse really is when in motion, even if it had been possible for the unaided eye to detect his real attitude." Ever since then the Muybridge photographs have been hailed as the first accurate representation of a galloping horse.

History does not record what Lieutenant L. Wachter of the 7th Regiment of Cuirassiers of the French Army said when he first saw the Muybridge photographs. They must have seemed familiar, for in 1862 he had written a book on equitation, *Aperçus Equestres*, in which he had discussed the question of the gallop in detail. From his close observation of horses, he had deduced the position of the feet. He sketched ten pictures of a

horse in gallop and then "put them to test on the phenakistoscope, and I saw my horse gallop in the mirror." The phenakistoscope was a toy in which the illusion of motion was produced. Drawings were made on a slotted disk, which was made to revolve opposite a mirror. Looking through the slits, the observer saw one picture after another, but so rapidly that—through the phenomenon of persistence of vision—they appear to blend and recreate motion.

Wachter's hand drawn pictures correspond exactly to Muybridge's photographs. It is tempting to suggest that someone in California could it have been Governor Stanford himself? —knew of Wachter's work on equitation and suggested that Muybridge attempt to make a sequence of photographs.

FORGOTTEN PIONEERS

II: ALBRECHT BREYER (1812-1876)

"Reflex" photography is a cheap and simple method of copying documents and printed material. A camera is not required, and it does not matter if printing is on both sides of the material. One merely places a piece of sensitized paper, emulsion down, on what is to be copied. The paper is pressed in firm contact by a sheet of glass, and the back of the sensitized paper is illuminated. The light passes through the sensitized material, and is reflected back by the white areas of the document but absorbed by the dark areas. Development produces a negative image of the original: white lettering on black and reversed from left to right. After fixing and washing, a permanent record exactly the size of the original is obtained, and positive duplicates can be made easily by contact printing.

Albrecht Breyer, a Berlin medical student at the University of Liège, was the first to discover this "reflex" printing, in 1839. As so often happens, Breyer's discovery was accidental. He had read about Daguerre's invention while it was still secret, and wanted to apply the technique to record images of the microscope. Since working directions for the daguerreotype had not yet been published Breyer attempted to make his own light-sensitive paper. One day he laid a piece of his experimental paper on a printed page. When he returned to it later, he found to his surprise a reversed image on it. He recognized the potentialities and dropped work on photomicrography to concentrate on this discovery. By March he had perfected a sensitized paper which he called "heliographic." Shortly after this, he received a copy of Talbot's brochure describing his similar "photogenic paper," and believing that Daguerre would quickly publish his process, Breyer gave up his experiments.

It was a friend of Breyer's, a Monsieur Morren, who delivered a sealed package of "breyerotypes" to the Academy of Science in Brussels on August 14. This was just five days before the historic session in Paris at which Arago revealed the details of Daguerre's invention. The Academy, then on vacation, delayed opening the package until it reconvened on October 5th. A month later, a letter from Breyer was read before the assembled Brussel's Academy.

It is not impossible to obtain copies of written or printed characters on completely opaque material. If one places heliographic papers in a certain manner on the documents, most of the light passes through these papers without being effected by the heliographic

substance; arriving then on the opaque body it is reflected by the white parts, absorbed by the black parts and it is by this combined action that I explain the phenomenon, which records in this case the image on the inner surface of the heliographic paper.

The breyerotype method of copying was cheaper than either the daguerreotype or the talbotype, required no camera, and especially was quick. Using a camera, an exposure of hours was required. Breyer claimed that, with his process, a seven minute exposure was sufficient.

Unfortunately, Breyer never published complete details of his process, nor did he ever refer to it again. He quietly practiced medicine in Brussels, and his invention was soon forgotten. Years later it was rediscovered.

PHOTOGRAPHER OF NORTH AMERICAN INDIANS

EDWARD S. CURTIS, born 1868, ethnologist and documentary photographer, began in 1898 to accumulate a comprehensive record of all the important tribes of Indians in the United States that still retained their primitive customs and conditions. He continued this work for many years, and in 1906 appeared the first of a series of publications prepared by him, unique in photographic history. When completed the work comprised twenty volumes of text illustrated with 1500 full page photographic illustrations. In addition to the text, Curtis published 20 portfolios, each containing forty 12 x 16 inch photogravures of his magnificent photographs.

This vast undertaking was financed by J. Pierpont Morgan, and Theodore Roosevelt wrote in the preface to the first set: ". . . He is an artist who works out of doors . . . He has lived on intimate terms with many different tribes of the mountains and the plains. He knows them as they hunt, as they travel, as they go on the march and in camp. He knows their medicine men and sorcerers, their chiefs and warriors, their young men and maidens. He has not only seen their vigorous outward existence, but has caught glimpses, such as few white men ever catch, into that strange spiritual and mental life of theirs, from whose innermost recesses all white men are forever barred."

In a 1907 copy of the *National Geographic Magazine*, George Bird Grinnell, American author and explorer who went with Curtis on the Harriman expedition to Alaska, wrote of Curtis' work: ". . . The pictures speak for themselves and the artist who made them is devoted to his work . . . To accomplish it he has exchanged ease, comfort, home life, for the hardest kind of work, frequent and long-continued separation from his family, the wearing toil of travel through difficult regions, and finally the heart-breaking struggle of winning over to his purpose primitive men, to whom ambition, time, and money mean nothing, but to whom a dream, or a cloud in the sky, or a bird flying across the trail from the wrong direction, means much."

The "heart-breaking struggle" included being shot at four times in one night, and barely escaping with his life when a baby he had photographed died. Once he promised Chief Red Hawk, who guided him on a long trip through the South Dakota bad lands, a feast for himself and twenty followers, hoping in that way to secure the goodwill that might result in photographs. Three hundred guests arrived, some of them important chiefs, each demanding food and special attention. When at last sufficient food was provided and the rank of each chief accorded due deference, the guests decided they would rest and smoke instead of posing. "Mr. Curtis quietly folded up his camera as if he had not traveled many weary miles just to get those pictures. There was no fault finding, no impatience, but with infinite tact he discussed affairs with some of the leading spirits. During the night a reaction set in. In the morning, the warriors led by Red Hawk and Slow Bull, rode into the camp. Their hearts were happy, they said, and they wished to help this white friend. Old rites were reenacted, old battles re-fought, old stories retold, and Mr. Curtis' pen and camera recorded it all."

Curtis' comment on the first picture of the series reveals the concern and sympathy for this "vanishing race" which impelled his life work. It is a beautiful subjective study in which the barely discernible figures of a group of Indians, lit only by the fading sunset, ride off into a dim twilight. "The thought which this picture is meant to convey is that the Indians as a race, already shorn of their tribal strength and stripped of their primitive dress, are passing into the darkness of an unknown future."

Because Curtis worked so devotedly and with such skill and artistry, that darkness is illuminated for modern students and admirers of the primitive North American Indian, by this superb collection of documentary photographs.

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, Howard Keith Stott, Erwin J. Ward. Printed in U. S. A.