IMAGE

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THE ARCTIC REGIONS

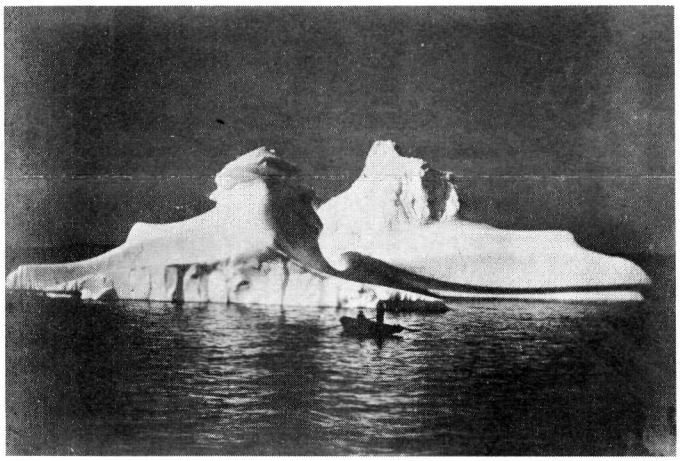
AN AMAZING photographic feat was undertaken in the summer of 1869 when two Boston photographers secured between three and four hundred photographs of the Arctic, all on wet plates.

William Bradford, an artist, had arranged the 5,000 mile trip. The photographers, Dunmore and Critcherson, had accompanied Bradford on one of his several previous voyages to Labrador, and had some idea of the difficulties and hazards of the expedition. The 350 ton steamer, *The Panther,* that transported them on this long journey, had been expressly designed for Arctic navigation. The passengers and crew totaled about thirty in all.

Before *The Panther* left St. Johns, Newfoundland, at the end of June, a darkroom was built aboard. The room was fifteen feet long and six feet wide, "with all modern improvements." The ship made many stops on the Greenland coast, giving the travelers an opportunity to meet Eskimos, learn their customs and partake of their food. In each village Bradford and his group were royally received and entertained by the local governor and his family. Dunmore recalled that in Upernavik, "The principal amusement there is dancing, and the principal smell is seal, which smell I smell yet."

Dunmore and Critcherson photographed the Greenland natives, but mostly they were engrossed with the icebergs and landscapes, of which they were constantly trying to get better views. Once when they attempted to climb a glacier for some spectacular pictures, they needed twelve sailors to help carry their cumbersome wet plate apparatus and materials. "It was so cold your watch chain would scorch your fingers."

They made remarkably beautiful pictures of icebergs at great risk of losing their lives as well as their equipment. Dunmore describes one narrow escape. "We sailed about sixty miles to the mouth of a glacier, where the icebergs break off, to take some views. Just as we were landing a large berg broke off which sent the water up twenty feet all over us, and washed away collodion, developing glass, green baize, etc., and came very near taking us along with them. As good luck would have it, our camera and tents were high and dry on the hill. We had to go on board and change our clothes, and the captain did not think it was safe to stop there any longer, so we got up anchor and steamed across the fiord two and a half miles, into a snug harbor. We had not been there more than half an hour when a large berg, two hundred feet high, broke off, which sent the water up forty feet, and if we had been in the old place, the steamer would have gone up twenty feet on the rocks. . . . I can give you no idea of what a beautiful sight it is to see an iceberg break off . . . and rock in the sea like a huge porpoise. It is a long time before the trouble of the water ends, or before the new-born babe ceases to be rocked, and is still enough to have its picture made."



THE TWINS: Illustration from *The Arctic Regions.* Taken on a wet plate in 1869 by the photographers, Dunmore and Critcherson.

Bradford complained about the insects which constantly annoyed the entire party. "The flies and mosquitoes swarm so densely, that one of the party, stationed a short distance from the camera, having a small picture of himself taken, it was actually rendered somewhat obscure by the cloud of insects around it."

Two whales, some polar bears, seals, and a swarm of ducks were encountered and photographed when possible. Collodion plates, 14 x 18 inches, were fully exposed, Dunmore reported, in two seconds. But he added, "everything worked flat, and I could not force the negatives up—the stronger the bath the flatter the negative."

One of the most highly prized photographs was taken by the light of the midnight sun. On returning home, Dunmore wrote in the 1869 *Philadelphia Photographer,* "I suppose no one ever photographed farther north, or in colder weather than we did, but we were well repaid. You shall see prints from our best negatives soon."

From the collection, 139 photographs were chosen, to be mounted and preserved in the mammoth book (20 x 25 inches), *The Arctic Regions,* which Bradford published in 1873. A copy of this rare publication is in the Eastman House library. The unusually fine quality of these illustrations is a tribute to the two photographers who skillfully handled the difficult processes under severely adverse conditions.

FORGOTTEN PIONEERS

V: John Benjamin Dancer (1812-1887)

WHEN the daguerreotype process was announced in 1839, John Benjamin Dancer, whose father owned a highly successful optical goods firm, was conducting scientific experiments. Within a few months he made a microphotograph: he reduced a bill twenty inches long to one-eighth of an inch, a reduction of 160:1. This experiment led to the spectacular use of microfilm during the Franco-Prussian War, when René Dagron sent miniature messages via the Balloon or Pigeon Post (*Image* No. 1, January, 1952).

In an 1859 issue of the *Manchester Photographic Journal* a personal acquaintance said of Dancer's experiments—twenty years before—"At the suggestion of a friend, he then used for the purpose [of reducing the bill] the eyes of recently killed animals, and produced with them some minute photographic pictures; these being electrotyped, and several copies taken from each, produced the letters and images of the pictures in their proper position."

In July 1840, during a lecture at the Liverpool Mechanics' Institution, Dancer used a microscope to make a six-inch daguerreotype of a flea, and in so doing contributed to the development of photomicrography as well. Shortly thereafter, using the solar microscope, he made photographs of wood and fossil sections, using both paper and plates.

After these remarkable experiments, Dancer became an interested spectator on the sidelines of photography while others struggled to overcome the limitations of the daguerreotype which permitted only a single copy, and the calotype which would not admit of magnification much over twenty diameters. The advent of Frederick Scott Archer's wet collodion process in 1851, however, removed these sharp limitations for microphotography, and Dancer immediately took up the new technique. When another photographer attempted, quite honestly, to claim priority on the invention of microphotography, Dancer wrote in 1859, " . . . I can state that even on collodion I had produced microscopic photographs in February, 1852."

One of his most significant productions was the reduction of the 680 word tablet erected in memory of the electrician William Sturgeon to a positive one-sixteenth of an inch in diameter: "The tablet in question was photographed on the 25th April, 1853, and reduced for the microscope early in the following month. . . . This and other microscopic photographs were known in this locality long before they had been supplied by me to dealers in such articles. . ."

By the time Dancer wrote defending his priority, he was doing a lucrative business in photographs of minute size, which he supplied to novelty shops. Queen Victoria possessed a set of his tiny portraits of the royal family. The rendition of ten thousand images in one square inch, and the reproduction of a family group on the head of a pin were among his achievements. Sir David Brewster, having received a sample of such work from Dancer, reasoned that if the same procedure were followed, a twenty-volume set of an encyclopedia could be reduced enough to be carried easily in a purse.

Dancer's inventive curiosity led him to explore other photographic fields. The year 1852 seems to have been a fertile one for him, for in that year he also designed a twin-lens stereo camera. In 1856 he was awarded patents which covered a rack and pinion focus for binocular stereo cameras, a spirit level for "cameras in general," revolving diaphragm discs, vertical adjustments for lens boards, and a plate magazine.

As the years rolled by, Dancer continued to lend his time and influence to the development of the lantern slide, and became a fountain of information for those who came to him seeking knowledge of the camera and the microscope. So generous was he with his time that it became necessary for him to keep up with his business at night, and gradually his eyesight failed. When he realized this his optical knowledge prompted him to keep a careful record of the destruction of his own retinas for the benefit of surgeons. Inevitably, his business failed with his eyesight, and it was necessary for his friends to come to the rescue with financial assistance. At the time of his death, Dancer was well remembered by the *Manchester Guardian* and *The British Journal of Photography,* the magazine in whose columns, his discoveries were once questioned and affirmed.

HARD CIDER AND RUSTY NAILS

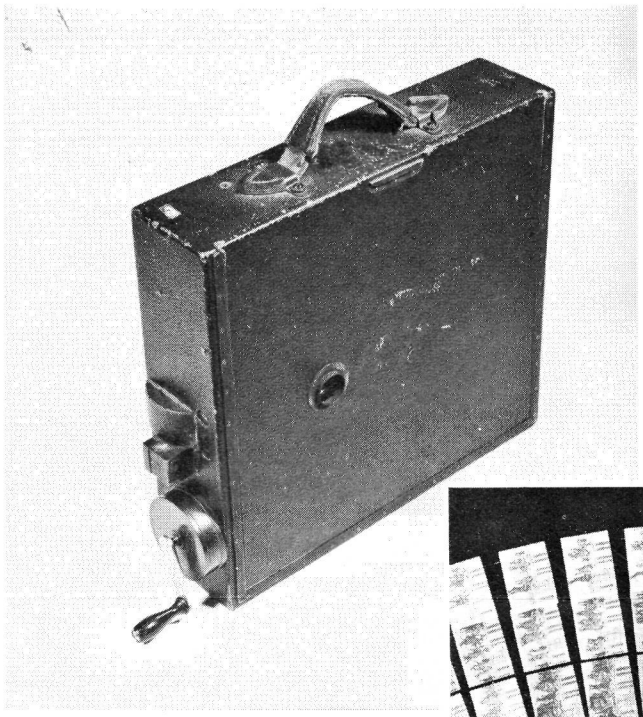
PHOTOGRAPHERS who suddenly find themselves lacking certain chemicals in their darkrooms might take a lesson from the improvisatory genius who, in early 1860, sent the following communication to the editor of *The American Journal of Photography and the Allied Arts.*

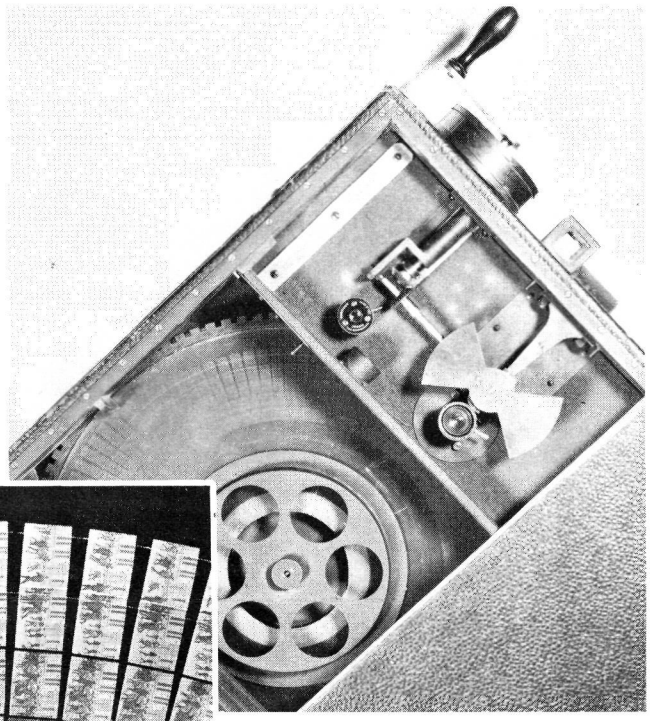
"Dear Sir.—Last winter, when almost exclusively engaged in making ambrotypes, I, one day, in preparing some developer, found myself without acetic acid, and resolved to try some ordinary vinegar instead.

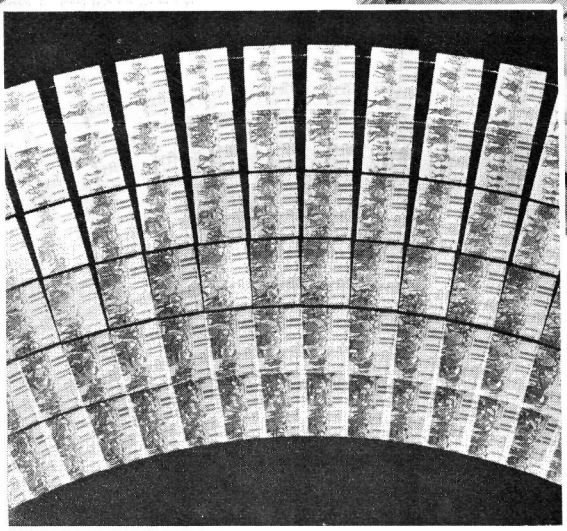
"I used double the quantity of acid and proportionately less water, and the ambrotypes were as good as any I have seen. In fact, it did not appear to make the slightest difference in the pictures. As this naturally set me to thinking on the subject, I resolved to try some apple cider on the same plan. The cider, I argued, especially when "Hard," contains both acid and alcohol, and there is no reason why is should not work well. I diluted it with water, added the proportionate amount of protosulphate of iron and developed. The experiment was a decided success. To modify the process still more, I threw some rusty nails in the cider and left it to stand over night. In the morning I again diluted it with water, tried it on a medium ambrotype, and found that it worked like a charm. . . .

"I am, Mr. Editor, well aware of the responsibility of giving this important process, gratis, to the fraternity. When in future a picture has not been sufficiently developed, we will say it requires more cider. Imagine the consternation which would be felt by a young lady, who while having her portrait taken, hears a mysterious voice (in the darkroom) gravely state that 'Miss Smith (or Jones), wants a little more cider.' Shades of Daguerre and Talbot forbid!!"

The columns of IMAGE are open to all who are interested in tracing the development of photography. Unsigned articles which appear in these pages may be reprinted providing that credit is given the George Eastman House.







Above: Kammatograph Camera closed, ready for use.
Top right: Camera open, showing position of exposed plate, lens and shutter.

Left: Contact print from one of the original negatives, showing spiral position of pictures around circular glass plate.

THE KAMMATOGRAPH

TO OVERCOME the fire hazard involved in using nitrate film for motion pictures, Leo Kamm developed and patented the Kammatograph in England in 1897. Camera and projector were combined in the same apparatus which was marketed by Kamm & Co. of 27 Powell Street, London.

A circular glass plate 12 inches in diameter was used as a support for the sensitive emulsion. At the center was a hole 1½ inches in diameter, and the plate was firmly clamped to the mechanism at the center and positioned by a notch in the rim.

An intermittent rotary motion and also a horizontal displacement were given to the circular plate, enabling a series of small pictures to be exposed upon it in spiral sequence. Shutter and advancing mechanism were synchronized so that the plate paused while the portion opposite the aperture was exposed when the rotary shutter was in the open position.

The Kammatograph was made in two patterns, both of them the same size, but one taking 350, and the other 550 pictures on the disc. Each picture of the 550 series measured ¼ x $\frac{5}{16}$ inch, while those of the 350 series were slightly larger.

The process of making positive records from the negatives involved little trouble: They were simply made by contact printing onto an unexposed plate. Processing was similar to that used for lantern slides today.

To use the machine as a projector, a disk bearing positives was inserted, and a light source attached to an aperture in the rear of the box directly behind the lens. The same lens used for taking the pictures was used in projecting them, and the machine repeated the same actions that were employed in making the photographs.

Although there was considerable novelty in the mechanism, the principle of arranging pictures in a spiral form upon a disc or drum was not new; it had been done by several American and French inventors prior to the inception of the Kammatograph, notably by Thomas Edison, who in 1887 began his motion picture experiments with a cylinder similar to the one he used for his early phonograph.

A little drum was coated with a photographic emulsion and motion pictures were made on it by a special cylinder picture-recording camera contrived by Edison and William Dickson that started and stopped forty-eight times a second. The individual pictures were hardly as large as the end of a lead pencil. They were viewed through a magnifying glass that moved horizontally as the drum was turned in order to keep pace with the displacement as the spiral progressed.

The Kammatograph did not have a long vogue nor did the Edison cylinder system prove practical because both were capable of only a limited number of pictures. Flexible roll film was coming onto the market at the time, and although it was inflammable, it made possible long rolls of film negative that could be used in the various types of equipment invented to accept it.

CHAPLIN'S LIMELIGHT

CHARLIE CHAPLIN has written, directed, produced (and composed) an extraordinary film called *Limelight*.

Reading old reviews of earlier Chaplin films, one is struck by an almost universal sameness of the reports in lamenting that while the new film is good, it is not quite as good as his previous release. There is no question this time about *Limelight* being something more or less than *Monsieur Verdoux*. The only valid question is whether or not *Limelight* may be Chaplin's finest achievement.

Limelight is the ultimate development of the theme first indicated by Chaplin in his 1915 Essanay two-reeler, *The Tramp*. In that film for the first time Charlie paused in the business of being funny to let us know that here was no shadow Punchinello without a soul quite vulnerable to mortal wounds. Now in *Limelight* after thirty-seven years of gradually increasing the non-comic portions of his work, Chaplin has done a film that is not funny at all—a picture that ends with the promise of no new road for the suffering clown other than the formidable adventure of eternity.

There will be those of course who find Chaplin's music-hall turns in *Limelight* very amusing, others who may laugh at the embarrassing opening scenes where he fumbles about, acting the drunk as he did in the Keystone days.

But others will be shocked and disappointed at the unfunniness of it, for the face is no longer that of comic Charlie, but the sensitive and aged face of Mr. Chaplin. Those who may be shocked must not leave in disgust. If they stay, it may be that this monumental film will begin, all imperceptibly, to have its way with them and lead them to a profoundly moving experience.

Limelight cannot be dissociated from Chaplin's own life. There are places in the film in which the artist almost invites the spectator to make the comparison. The total effect of the association is that of a devastating baring of his soul by Charles Chaplin. The soul thus revealed is, just as one has always hoped and suspected, a wry and compassionate one that looks through eyes that cry without tears in a face that wears a brave smile which fades away like relinquished hope.

There is in *Limelight* a scene with Buster Keaton which begins to be hilarious. But Chaplin, the director, reproves the laughers by abruptly shutting off the laughter of the make-believe audience. The effect is a strange one. Spectators have been yearning for a place to laugh heartily throughout *Limelight*. At the start of the Chaplin-Keaton sequence, the moment seems at hand and roars of spontaneous laughter almost drown out the record hilarity of the spectators in the film itself. Suddenly, without apparent reason, the film-laughter from the sound track ceases. The merriment of the real audience takes on an uneasy, bewildered quality.

Limelight is not a comedy.

Charlie Chaplin in his latest film: "Limelight"
United Artists Photo

Historically, the films of Charlie Chaplin occupy a category unique among the motion pictures that endure as important works. His films made not one single contribution, technically, to the development of the cinema. Chaplin uses the medium altogether as a musician uses an instrument with no workman's concern for the modification of the instrument itself.

The fame of D. W. Griffith rests not at all on the sentimental and melodramatic content of his work, but on the cinematic techniques he employed. With Chaplin, the case is just the opposite; his films always seem old-fashioned in technique. Yet his own behavior in them is timeless, transcending all styles of cinematography.

The music Chaplin composed for *Limelight* cannot be considered a score for the picture; it is an integral portion of the film and no more to be separated from it than the lighting. It is doubtful whether anyone will call the music great, for it lies somewhere between the haunting melodies of popular music at its most nostalgic and creative composition of academic stature. Of course this is just the sort of area that remains the special domain of all Chaplin's film work too—a realm in which there is no competition and no valid comparisons.

Like the best works of Carl-Th. Dreyer, *Limelight* follows none of the rules for good cinema dear to theorists. Like Dreyer's work too, it will be misunderstood and admired; it will inspire tears and contempt. It is one of the four or five films that no human being should miss, for to face civilization without having seen it would be living with one's education unnecessarily incomplete.

If Chaplin should decide to end his career with *Limelight*, no more fitting epitaph could be conceived for the tragic little clown who won the heart of every person of good will in all the world.

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