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# Henderina Victoria Scott

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**Also Known As:**

Henderina (Rina) Victoria Klaassen, Mrs. D. H. Scott, Rina Scott

**Lived:**

July 18, 1862 - January 18, 1929

**Worked as:**

experimental cinematographer

**Worked In:**

United Kingdom: England

**by Amy Bethel**

Henderina (Rina) Victoria Scott, née Klaassen, was a botanist with a special interest in fossil botany and plant physiology. Our interest lies with her pioneering experiments with cinematography in the early 1900s when she photographed and exhibited around a dozen moving pictures featuring plant and flower movements.

Henderina Klaassen was born in 1862 in Brixton, Surrey. She studied advanced botany at the Royal College of Science in 1886, where she was lectured by the botanist Dukinfield Henry Scott. A successful personal and professional partnership ensued. They were married in 1887, and Rina Scott began to assist her husband with his work while also conducting her own research. They were both notable in the field of botany, and material relating to Rina Scott is archived under both her own name and her husband's.

Other than a handful of obituaries in the scientific press, there is no real public record of Scott's life or work. To date she has been little more than a footnote in motion picture history, cited only for showing time-lapse films at the Royal Horticultural Society in 1906 (Low 1949, 158).

However, her career deserves further investigation, the consequences of which should award her more recognition in light of her creative use of experimental photographic techniques and her enthusiasm for exhibiting her films for scientific purposes.

It was in 1902 while studying the plant *Sparmannia africana* that Scott first saw the potential of cinematographic technology as a scientific tool. She spent at least a year experimenting with cinematography before publishing her results in the *Annals of Botany* in 1903, claiming to have

made the “first kinematograph experiments under natural conditions, daylight being used and artificial light only resorted to at night” (775). Despite initial challenges, Scott’s experiments were well suited to cinematographic work and enabled the observer to witness what is usually imperceptible to the eye. Plant growth that took several months could be viewed in mere seconds when photographed at intervals and projected on screen. Scott later explained during a lecture in 1906, referenced in the *Journal of the Royal Horticultural Society*: “An ordinary kinematograph picture reproduces *rapid* movements of living objects. The purpose of my pictures is to show at an accelerated speed *slow* movements which cannot be watched by the eye, such as the growth of the young plant from the seed” (49).

Scott’s inspiration appears to have come from Professor Pfeffer in Germany who used a kinematograph around 1900 for botanical demonstrations. Pfeffer was using a comparatively expensive kinematograph adapted specifically for his experiments. Scott, however, experimented with a standard kinematograph and discovered that the damp, humid conditions in her greenhouse were not compatible with celluloid film, and unfortunately the inventor of her machine was unwilling to adapt it to her needs. The London-based inventor of the Kammatograph, Leonard Ulrich Kamm, was more useful to her since he customized a machine to suit Scott’s work.

In 1898, Kamm patented his combined camera and projector, the Kammatograph, and marketed it for amateur use from circa 1900. The main advantage for Scott was that it used a glass disc to record a spiral row of images, rather than using film, so it was better suited to her greenhouse studio. Once the sensitized disc was removed and developed, a positive plate could be printed from it. A lantern was placed in front of the wooden box housing the machine, and the resulting images were accelerated when projected on screen. Her model could take 350 photographs, giving her around thirty seconds of motion pictures.

Scott usually took regular time exposures at fifteen minute intervals rather than using instantaneous photography. She did, however, use instantaneous photography in order to capture rapid movements such as a stamen being touched. In the 1907 *Royal Horticultural Society* journal article, Scott described the time-lapse method of photography as “very laborious work.” It was a time-consuming process, and Scott also bemoaned: “I have only about a dozen successful plates as a result of over three years’ labour” (50).

This was not of course a commercial enterprise. Scott does not appear to have sold or marketed her animated photographs. Rather, she saw herself as a “private investigator” (772) and employed the kinematograph for research rather than for public entertainment. As well as publishing the results of her Kammatograph work in the scientific press, she demonstrated her moving pictures at a variety of scientific societies in the south of England. Much of the information concerning Scott therefore derives from scientific archives and journals, a fruitful source for necessary cross-disciplinary research.

On August 19, 1904, Scott gave an exhibition of her Kammatograph photographs at the Cambridge meeting of the British Association for the Advancement of Science, documented in

their report (102). Later that year, on December 2, she exhibited the same program at the Holmesdale Natural History Club in Reigate. Scott described the apparatus and method for taking pictures and exhibited animated photographs of flowers opening and closing, buds expanding and developing into flowers, the sensitive plant closing and re-opening, the movements of climbing plants, and insects visiting flowers (73). It is difficult to know how Scott's animated photographs were received as they were shown to scientific audiences and not the paying public. Her presentations at scientific societies were not reviewed critically, presumably because she was either a society member or a guest. Brief details were generally recorded in society proceedings, and the most descriptive comment we have is from the Holmesdale *Proceedings*: "Mrs. D. H. Scott... gave a very interesting exhibition of Kammatograph Pictures" (73).

In February 1905 Scott became one of the first women to be admitted as a fellow to the prestigious London Linnean Society. Less than a month later, she exhibited nine animated photographs at the society, we learn from the 1904–1905 *Proceedings* (10–11). From the 1906–1907 *Proceedings* we learn that in April 1906, Scott delivered a lecture at the Royal Horticultural Society showing around six of her animated photographs. In 1907, she displayed animated photographs again at the Linnean Society, on this occasion for the Society's June anniversary meeting (63). This appears to have been Scott's final exhibition of animated photographs, although there may be further demonstrations that have not yet come to light.

A poignant entry in her husband's diary on January 18, 1929, records Rina's unexpected death after a short illness at her home in Oakley, Hampshire. Dukinfield writes: "the blow fell... I found Rina unconscious." Scott's pioneering work with cinematography over twenty years earlier had enabled her contemporaries to see the invisible. When projected on screen, her Kammatograph plates manipulated and accelerated time, allowing her to demonstrate an inherently slow but *vital* process—the growth and evolution of plants. This must surely have been an incredible visual experience, so it is particularly unfortunate that none of Scott's films are known to have survived. It would be a fitting tribute if unidentified Kammatograph plates could be attributed to Rina Scott so that the fruits of her labor can be brought to life on the screen once more.

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