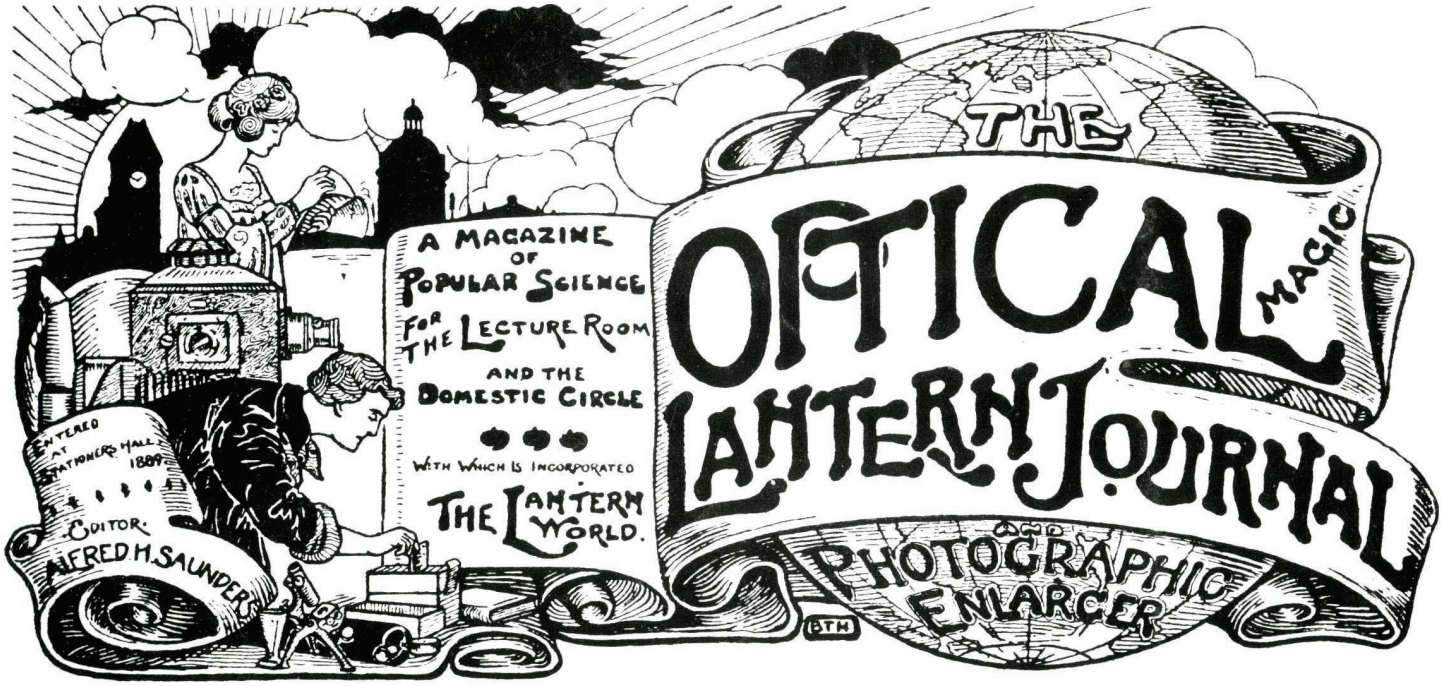

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THE MOTION PICTURE EXPERIMENTS OF JOHN ARTHUR ROEBUCK RUDGE

RAYMOND NEWPORT

I first became aware of J A R Rudge, Bath's 'Wizard of the Magic Lantern', when I was a small boy, about sixty years ago. My best friend John lived at Sham Castle Lane in Bath, and I was often at his house. His father, Frank Huxtable, claimed he had been the first film star. Even then he liked to 'pull faces' and it was this ability that made Rudge choose him as the subject for a 'movie show' which he exhibited at the Bath Assembly Rooms in 1887.

He showed me the twelve pictures that Rudge had taken of him, wearing an Eton collar and going through all the expressions between joy and misery. He told me that he had gone to Rudge's workshop with some trepidation, for Rudge had the appearance of a wizard, as well as a reputation as 'the JAR of Knowledge' (a play on his initials). Rudge at that time was a well-known figure in Bath, tall but stooping, with iron-rimmed glasses, a preoccupied expression, and a straggling beard, once red but now grey. He also had a twisted nose, the result of an unfortunate encounter with a shop shutter at the corner of Quiet Street. In those days this shutter was pushed up from below street level and Rudge must have been looking in the window at the wrong time.

The inventor tried to put the boy at ease, and gave him a glass of milk and some cream crackers. But since Rudge had long, thin bony hands, stained with chemicals, Frank drank the milk but slipped the biscuits into his pockets, using his facial skills to pretend he was eating them.

Naturally I was interested and wanted to know more about Bath's own movie pioneer. At that time Ernest Crawford, who had been a friend of Rudge, was a well-known figure in Bath. Latterly known as 'The Sage of Larkhall', in his youth Mr Crawford was notorious in Bath as 'the man without a hat' – to wear no head covering was an almost scandalous defiance of late Victorian and Edwardian custom. In his eighties, in the late 1950s, he was still a striking figure with flowing hair and black beard, generally clad in blue overalls, with no socks, and carrying an umbrella. He was a vegetarian and an energetic opponent of vaccination and vivisection.

Every year on Rudge's birthday he and the inventor's nephew Edgar would place flowers on the inventor's grave in St Michael's cemetery. When I became Programme Secretary of the Bath Film Society I invited Mr Crawford to come and talk to us, which he did on 9 December 1949. He brought with him Edgar Rudge, then aged eighty. Edgar had lived and worked with his uncle from 1885, when he was fifteen, until he married. I told him about my interest and he was only too pleased to talk to me some time later at great length.

John Arthur Roebuck Rudge – he was named after a popular local radical politician of the time – was born on 26 July 1837, over the shop at 28 Southgate Street, Bath, where his father traded as an antique restorer and wood carver. In the 1860s Rudge himself set up as a scientific instrument maker with a workshop at 1 New Bond Street Place. He never married, but devoted his life to his work.

Residents of Victorian Bath were familiar with his electrical experiments. Edgar Rudge told me that his uncle was the first to

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introduce electricity to Bath, and that a large crowd came to see the first exhibition of electric light which he demonstrated outside a pub in Southgate Street. An announcement in *The Bath Journal* of 29 November 1862, when Rudge would have been about twenty-five, reads:

Mr. J.A.R. Rudge begs to announce that he intends giving his annual Lecture on electricity at The Corridor Rooms on Wednesday December 3rd. Illustrated by Newly-Invented and Brilliant Experiments. Some of the Apparatus has never before been exhibited in England, chiefly made and invented by the Lecturer.

On 31 October 1867 *The Bath Chronicle* announced:

Mr. Rudge having completed his New Lamp for the Improvement of Electric Light, intends, weather permitting, to test its powers on Beechen Cliff on the evening of Tuesday November 5th 1867 at Half Past 7, illuminating at intervals the Old Bridge, the Abbey, South Parade, Royal Crescent etc.

For royal and other special occasions he would illuminate the Abbey and the fountain in Laura Place, with Edgar humping the bulky equipment to the site. He built an electric engine, which he named The Electra, and which took its power from the rails and was powered by twenty Bunsen batteries. He exhibited this, running it along the parapet at the Sydney Gardens, and was said to have collected £16 in three-penny coins for charity in this way.

In 1895 when Röntgen invented X-rays, Rudge had been working with similar equipment and said to Edgar, 'Good heavens! I must try this.' Within a fortnight he had his own equipment working. It was said that had he worked with a vacuum tube of slightly higher refraction he might have been first with the discovery.

Other inventions included a coin-operated weighing machine which stood for many years outside George Weaver's shop in Broad Street, Bath, and in which the person to be weighed sat in a basket chair; and a quick-firing gun, made in the late 1870s and which, Edgar had been told, Rudge tested by firing at the ceiling. At the 1949 Bath Film Society meeting, Mr Crawford recalled being told by a certain Thomas Birchall (or Burchall) that Rudge had invented a motor for boats, and that the two of them had tried it out on the Avon. One of the only two patents for which he had ever applied was for a self-inflating life-belt, containing bicarbonate of soda. The date of the application was 31 August 1896. Edgar recalled that they tested it by throwing his younger brother into the local swimming baths.

But it is for his work with the magic lantern and motion pictures, and especially for his relationship with William Friese-Greene, that he will be most remembered. Friese-Greene was a Bristol man who had moved to Bath and opened a photographic studio at 34 Gay Street. He was introduced to Rudge in 1880 and the two soon

Will Day (second from left) unveils the monument on Rudge's grave, 1926

became friends. Friese-Greene was then aged twenty-five, shorter than the lanky Rudge, and attractive with his blue eyes and charming manners. He was especially fascinated by the older man's attempts at making pictures move on the screen.

Rudge was then in his forties and had been experimenting with moving pictures since he was Friese-Greene's age. According to Will Day, his first experiment, 'Life in the Lantern', was with two discs revolving in front of the lantern, one a transparent disc with twelve pictures round the edge, the other opaque with a section cut out. This disc made a complete revolution while the picture disc moved one place, rather like the relation of the hour hand and the minute hand of a clock.

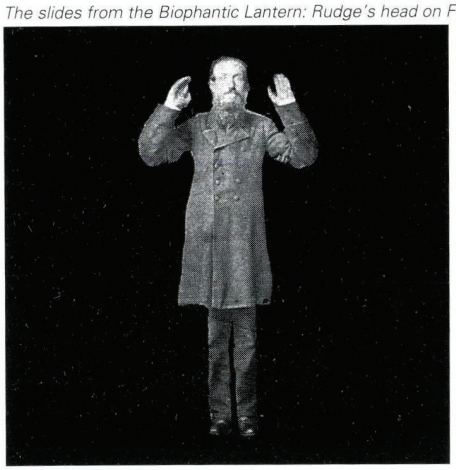
But the apparatus that most intrigued Friese-Greene, and which eventually changed his life, was the Biophantic Lantern which Rudge had made four or five years before they met. Rudge had arranged a rack with seven pictures which surrounded the lantern. A handle moved each picture in turn to the front of the lens. The movement when the pictures changed was obscured by a V-shaped shutter of ground glass which opened and closed like scissors. As at least ten pictures a second are necessary to give the illusion of movement, Rudge's seven slides must have produced a jerky effect.

Together Rudge and Friese-Greene created a set of pictures in which a man took his head from his body and put it under his arm. The body was Friese-Greene's and the head, appropriately, belonged to the man known as 'The Wizard of The Magic Lantern'. This was the apparatus that led Will Day to call Rudge 'The Father of Kinematography', though another device seems even closer to the modern projector. This was for a show which Rudge called 'Jumbo's Funniosities'. Jumbo the elephant was a great favourite at London Zoo, indeed a national figure, and there was a public outcry when he was sold to Barnum and Bailey's Circus and shipped to America in 1882. Rudge took a series of pictures of a rubber elephant in all sorts of comic antics and exhibited his 'movie' at the Assembly Rooms and the YMCA Building in Broad Street, Bath. According to Edgar the frame which held the slides stood out several feet from the side of the lantern. This was practically the same stop-frame method used by animators like Nick Parks with Wallace and Grommit, more than a hundred years later.

In 1885 the ambitious Friese-Greene moved to London and opened a studio in Piccadilly, but he would come to Bath at the weekends and often look in at Rudge's for supper, and of course talk. Edgar Rudge had gone to live with his uncle about this time, though unfortunately he could not remember any of the details of their conversations. It was largely about 'life in the lantern' and he well remembered one particular day when Rudge demonstrated a moving picture he had made of Edgar's cousin. He had abandoned the intermittent motion of the Biophantic lantern and reverted to the dissolving view principle. The simple apparatus consisted of a disc with four pictures of the boy's face with different expressions.

Rudge had dispensed with the telescopic tube and lens of the magic lantern and instead given each photograph its own lens, focusing on the same point on the screen. An opaque disc with one triangular hole revolved behind, illuminating each image in turn. The resulting projection gave

The slides from the Biophantic Lantern: Rudge's head on Friese-Greene's body



a much more lifelike effect than the crude lantern, even if the action was shorter and more repetitive. Friese-Greene, according to Edgar, went almost wild with excitement, and paced the room saying 'We must do something with this, Rudge.'

Rudge took four photographs of Friese-Greene's face and sold him the apparatus. Edgar took it to Friese-Greene's studio in Piccadilly. He gave Edgar a five pound tip – a lot of money for a boy in those days. He was always a generous man, according to Edgar – recklessly so sometimes.

This four-picture apparatus was just an experiment for a larger machine. What we would call the final Biophantoscope consisted of two discs of twelve or more pictures each with its own lens. As the two discs revolved side by side, so the light source would move to each picture as it came into position.

And here I must comment on the use of the term Biophantoscope. When I saw the seven-sided lantern in the Science Museum in 1952, where it was part of the Will Day Collection, it was simply labelled, Rudge's Lantern Slide Projector 1875. Yet in his article in *The Illustrated London News* of 1 October 1927, Day consistently refers to it as the Biophantoscope. I wrote to Ernest Crawford and received this letter from Edgar:

Mr Crawford has passed on your letter to him of Aug. 20 and asks me to make comment on same. The apparatus with the slides revolving was christened by my uncle The Biophantic Lantern. His Biophantoscope followed some years later and consisted of two discs revolving side by side and was illuminated by a lantern moving over to each picture as it remained stationary, each disc having its own projection lens and the images were superimposed on each other. There was no loss of light and no interval of darkness, There were about a dozen pictures on each disc.

However, in conversation with me later, he said that his uncle was rather pleased with the name Biophantoscope and used it when referring to any of his projection devices. It is strange but I think that possibly Biophantoscope was the name of whatever he was working on at the time, which is how Will Day knew it. Perhaps when he had abandoned it he called it the Biophantic Lantern to distinguish it from his new contraption.

In *The Photographic News* of 1 February 1889 appeared a letter from Rudge, in which he wrote:

In your issue of January 25th, I notice in your report of the proceedings of the Photographic Society of Great Britain that Mr. Friese-Greene showed an appliance for exhibiting a life-like effect upon the screen, but he omitted to say who was the originator of an apparatus of that kind. Permit me to say, through the medium of your valuable paper, that I am the first inventor of perfect life-like effects in the lantern without the aid of persistence of vision.

He goes on to describe his method, and it is worth using his own words:

This apparatus consisted of a rack worked by a special mechanism which carried the pictures in their exact position in relation to each other. I now make the apparatus for one or two lanterns. If for one lantern, the pictures taken are smaller, and worked by two racks in one frame; in place of the usual front lens of the lantern, two small ones are used, and by shifting these very slightly towards each other, the pictures can be registered so as to come one on the other on the screen. There are two ways in which the wonderful life-like effect can be produced. - 1st, By moving the picture: 2nd. By moving the light and condenser. 'The latter method gives the most perfect result. I have been perfecting this invention for the last fifteen years, and have spent a large amount of labour and expense upon it. I have exhibited it publicly for two years.

The ironic, and indeed pathetic aspect of this letter is his phrase 'without the aid of persistence of vision', and also the date. 1889 was the year in which celluloid became available, and on 27 November of that year a Mr H Smith of the Eastman Company demonstrated celluloid roll film to the Bath Photographic Society, and Friese-Greene was present. Now, with all the principles of cinematography well known, it was only a matter of time before one of the many inventors working on the problem would succeed in filming moving objects and projecting them onto the screen. Edgar Rudge recalled Friese-Greene calling at New Bond Street Place with a parcel. 'This will interest you Rudge,' he said, and took out his motion-picture camera, which he demonstrated to a meeting of the Bath Photographic Society on 25 February 1890. Some writers have mistakenly stated that he actually projected pictures on this occasion, but in fact he had not developed a projector to match his camera.

Rudge's claim of publicly exhibiting his own projection device for two years prior to February 1889 ties in with a public show which was locally believed to be the first 'movie'. Major Noel Harbutt, the son of the inventor of Plasticine, gave a talk on the radio in 1943 in which he said:

I was a very little boy in those days, and like most little boys the lantern had a fascination for me, with the result that I became a friend of Mr Rudge – that is as far as a little boy can be a friend of an elderly man. The material result was that he often let me see some of the strange things in his workshop...

It would be about 1887 that Mr Rudge informed the public that he would show a living picture by permission of Messrs. Pool's [sic] Panorama Show at The Assembly Rooms, Bath and of course I had to go and see it.

My memory is of a circular disc of glass about ten or eleven inches across. On the edge of it were twelve small photographic transparencies of a boy's face above an Eton collar. The face twisted from crying to laughing. A circle of glass was fixed in Mr Rudge's ordinary lantern, and it threw a picture about four feet across onto a screen. There was a four-bladed fan to cover the change of each picture, and this fan flickered for a moment across the lens. That is how the term 'flicks' originated. On another occasion in Rudge's shop I actually spun that glass disc – almost certainly the first living picture on the screen.

In 1952 I mentioned this show to Edgar Rudge. He was sure that it had nothing to do with Poole's Myriorama, an entertainment of tableaux, transformation scenes, and canvas panoramas. I enquired of the Poole family, and they agreed. Edgar also said that his uncle never made an apparatus with a four-bladed fan. The Frank Huxtable show was not on a disc, but on a square plate with the light moving behind the pictures. This would agree with Rudge's own description in his letter to *The Photographic News*. Probably Major Harbutt had seen and spun one of the Biophantoscope discs with pictures of Rudge's nephew.

So Rudge's Biophantoscope became a part of cinema's pre-history. But to Rudge life-like effects on the screen had always been just a scientific curiosity. He kept on with his main occupation, and it was after an exhibition in Oldfield Park, when he was going to collect some of his apparatus, that he had a bad fall outside Green Park Station. He broke his thigh just below the hip and after that could only get about with crutches.

They got a wheelchair and Edgar tried to tow him behind his bicycle, but without much success. He moved to Forester Avenue for a time but soon tired of inactivity. 'I want to go back and die in my old home', he said, and there he went on working to the neglect of his health. Edgar remembered him working at his lathe, often in pain, leaning on one crutch.

Rudge died almost penniless and would probably have become just a shadowy figure in the Friese-Greene story but for the championship of his old friend Ernest Crawford and the generosity of Alderman Cedric Chivers. During his mayoralty he had a plaque commemorating both Rudge and Friese-Greene erected at New Bond Street Place. He also had a fine memorial placed over Rudge's grave in St Michael's Cemetery at St John's Road, Lower Weston. It was unveiled by Will Day on 14 October 1926. Sadly, today it is so eroded that the inscription is barely legible.

After years of effort and opposition Ernest Crawford had a second plaque, which he designed himself, placed at the entrance of Rudge's old home and workshop. It was finally unveiled by him on 6 November 1947, forty-four years after Rudge's death. 'Whatever my failings,' said Ernest Crawford, 'I have kept faith with Rudge. I have not lived in vain.' The plaque reads 'Here lived worked and died Rudge,