

Kinemacolor

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Ernest Lindgren Memorial Lecture
BFI Southbank, London Film Festival, 11 October 2017



Good evening everyone, and thank you for coming this evening. It is a great honour to have been invited by the BFI to give this Ernest Lindgren Lecture, and I am delighted that there are members of Ernest Lindgren's family with us this evening. Lindgren's principles and far-sightedness have given us the film archives that we treasure today.

My subject is the restoration of colour, specifically the return to our screens of Kinemacolor, the first successful natural colour motion picture process. It is a subject whose history and elusive but magical qualities have much to tell us about why we must strive to restore our film heritage, yet how challenging such a goal can be. For those who like round numbers, it is also one hundred years since the last Kinemacolor film was produced, in Japan.

Too few realise how *early* colour came to the cinema, and what an important role it played in the social acceptance of cinema, in its economics, and in its aesthetic choices. In this pre-Technicolor era, Kinemacolor was dominant, not just because it made a lot of money, albeit over a short period of time, but because it seem to represent the best of what the new medium could achieve. It made the cinema proud of itself.

But although Kinemacolor gets a passing mention in the film histories, few of us have actually seen any of it. Only a tiny amount of Kinemacolor survives, some 50 or so titles, and it is only in 2017 that a significant number of these have been restored. We need to start looking at Kinemacolor again, because we cannot understand cinema history without it. That is the theme of this evening's show.

Another round number to celebrate is sixty - it is sixty years since the core of this building opened as the National Film Theatre, replacing the temporary structure of the Telekinema which had been built for the Festival of Britain in 1951. On the day of the official opening, 16 October 1957, which also saw the opening of the inaugural London Film Festival, some of the greats of world cinema were in attendance, and here they are.

From left to right along the back you have Akira Kurosawa, Vittorio de Sica, John Ford with the medals and dark glasses, an obscured Rene Clair, and on the right Laurence Olivier. The young man peeking round behind Olivier is Charlie Beddow, the NFT's first chief technical officer. In front we have of course Princess Margaret and Gina Lollobrigida, but not many are likely to recognise the elderly gentleman standing beside them on the



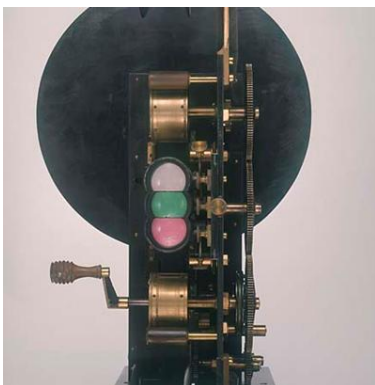
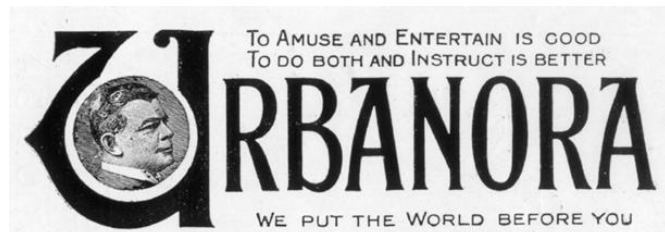
left. He was ninety-three years old, and had been invited as one of the last surviving pioneers of the earliest years of filmmaking in this country. George Albert Smith made his first film in 1897, and gets a mention in many a film history for being one of the so-called 'Brighton School' of filmmakers whose creative ingenuity first demonstrated the imaginative possibilities of the new medium. But Smith did not only help invent film form; he invented Kinemacolor.

Here is Smith in his prime. He was an extraordinary figure. Born in 1864, even before he became involved in film he had been a hypnotist, a showman, the manager of a pleasure garden and private secretary to one of the leading members of the Society for Psychical Research. He began making films in 1897, employing trickery and innovative use of cutting, close-ups and subjective viewpoints. He also became an expert film processor, and it was as both a filmmaker and film developer that he came to the attention of the major figure in our story, Charles Urban.



Urban was an American of German ancestry who was born in 1867 - so, continuing our round numbers theme, this year is his 150th anniversary. He came to Britain in 1897 to get involved in the nascent film business. Urban was one of early cinema's great visionaries. His self-appointed mission was to instruct the world through motion pictures. While others used the new medium to tell stories, Urban wanted to use it to illuminate the world for a mass audience - and to make himself wealthy in the process. As one of his slogans put it, "To entertain and amuse is good; to do both and instruct is better." This is what Kinemacolor meant for Urban, the apotheosis of his mission as a showman and an idealist.

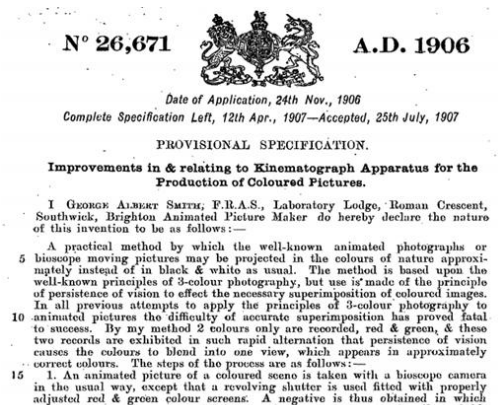
I'll keep the history short. Urban had established a film company, the Warwick Trading Company, in 1898, where he first employed George Albert Smith. He formed a new company, the Charles Urban Trading Company, in 1903, and brought Smith with him. By this point, Urban had become interested in colour cinematography.



He had funded the work of one Edward Raymond Turner, who in 1899 had patented a motion picture colour process which attempted to bring together three separate film records, each shot through separate filters of the primary colour, red, green and blue, with the aim of creating a perfect colour motion picture result. Turner's ideas were sound in theory, but a failure in practice, owing to the need to a colossally high projection speed and the difficulty of making the three images project together in correct register. The result was unwatchable. In 1903, Turner then fell dead of a heart attack, and Urban handed the development work to Smith.

This was a smart move. Smith was closely acquainted with a number of people from the Brighton area who were interested in colour photography. Some had made their own efforts at colour cinematography, without success, but had turned to Smith to do their film processing for them.

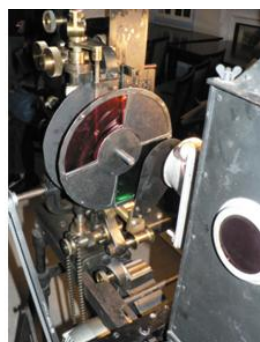
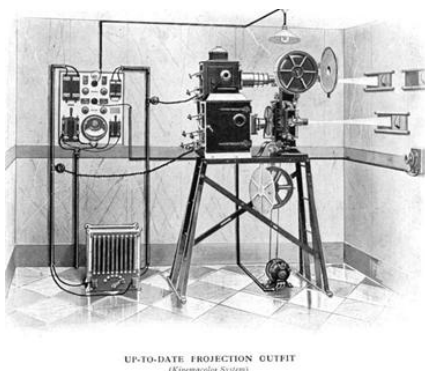
Smith learned from their mistakes. He saw that Turner's three-colour solution was impractical, but that one could achieve a reasonable colour effect if one worked with just two of the primary colours, red and green. It was not just that red and green combined could create a satisfactory colour illusion, but that something went on in the brain that helped compensate for the missing primary colour. Smith, the illusionist who had made illusion the theme of his first films, now became the architect of the illusion of true colour.



Some of Smith's first tests of the process that would later be called Kinemacolor survive, and are held by the BFI. Our first film may have been made in 1908, the year after Smith's patent for the new process was accepted. It has long been known under the archival title of *Woman Draped in Patterned Handkerchiefs*, but I recently found out that its correct title is *A Scottish Lass*. Its subject is Dorothy, G.A. Smith's daughter:



A Scottish Lass (c.1908)



Kinemacolor worked by shooting film at 32 frames per second through a rotating filter with red and green sections, and then projecting the film at the same speed through the same two filters. Each image was effectively filmed twice, once through the red filter, the other through the green, which were then brought together in projection. Consequently a Kinemacolor

film was physically twice as long as a monochrome film, as each image was duplicated.

However, there was more to Kinemacolor than filters. Smith's real genius was not in realising that two primary colours might achieve a satisfactory combined colour effect, but in his use of sensitizing chemicals - in technical terms, turning orthochromatic film stock into panchromatic film stock, able to record and display the full colour spectrum.

The inventor having done his work, the salesman took over. Urban launched Kinemacolor - though it was still not known by that name - on May 1st 1908 at the opening of his new building at 89-91 Wardour Street, the first film company to move to the street that was to become synonymous with the British film industry.

Here is Urbanora House, as it was boldly named, in its pomp, displaying a certain amount of artistic licence - and a less romantic view of the building today, though you will see that the name 'Urbanora House' is still there at the top.



Initially showing the film process on a few occasions to industry representatives, journalists and dignitaries, Urban prepared for a public launch in 1909. He started to build up a film library, while setting in motion plans to gain full control of the patent rights, over which he and Smith would soon fall out bitterly, not be reconciled for another thirty years.



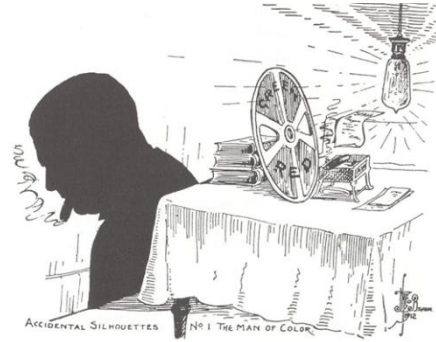
Kinemacolor was launched formally at the Palace Theatre, London on Friday 26 February 1909, when it was first named as being Kinemacolor.

Sadly none of the film listed on that first programme survives, but we do have one Kinemacolor film from that first burst of production activity in 1908. It is called *The Harvest*, probably filmed by John Mackenzie. Here is the latter part of the film:



The Harvest (1908)

Kinemacolor was an almost immediate success, not just because people wanted to see it but because people wanted to talk about it. Colour was not a new thing in the cinema - hand-painted films had been available, for a high price, since the earliest days, while mass-produced films from the French firms of Pathe and Gaumont, using stencils and a factory team of operators, had made colour a regular part of the filmgoing experience. But Kinemacolor was a natural colour process. It was true to life, as Urban's publicity machine was quick to argue, rubbishing the competition in the process, with their artificial methods and consequently false representation of life.



Of course, Kinemacolor was not wholly true to life itself. Logically, by using only two of the three primary colours, it could not faithfully represent the full colour spectrum. The means by which it recorded colour, with the same image recorded on successive frames through different colour filters, although recorded only a split-second away from each other, meant that for objects in motion Kinemacolor often had a red-and-green fringing effect. This was apparent in the rotating wheel at the farm in the film we just saw. Kinemacolor, as you discover this evening, worked best when things moved slowly.

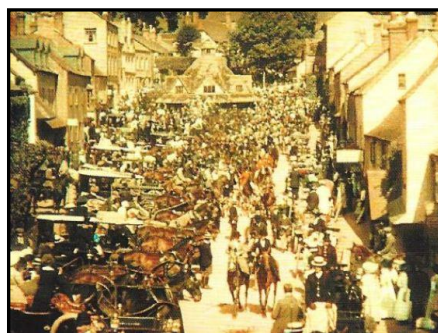


Urban established a new company for Kinemacolor production in Britain, the Natural Color Kinematograph Company. One of its directors was Ada Urban, his wife, whose money had bought out the patent rights from G.A. Smith, making her the most powerful woman working in British film at this time. The new

company had a new building, Kinemacolor House, at 80-82 Wardour Street, just across the road from Urbanora House. Here it is in its prime, and how it looks today.



Let's see another film. *A Run with the Exmoor Staghouads*, like *The Harvest*, is one of a number of recent restorations of Kinemacolor films produced by the L'Immagine Ritrovata laboratories in Bologna, Italy. It was made in 1911, and is a good example of Urban's documentary style, with a steady but propulsive narrative flow and arresting images. We are showing three extracts from what is in full an eight-minute film. The village featured at the start is Dunster in Somerset.



A Run with the Exmoor Staghouads (1911)



Urban wanted to put the world before you, and sent out camera operators across the globe to make good on the promise. Between 1909 and 1915 he had operators in Algeria, Australia, Canada, Ceylon, Egypt, France, India, Jamaica, Japan, New Zealand, Norway, Panama, Russia, Serbia, Turkey, the USA and several more. Our next film, another of the Bologna restorations, was filmed in 1911 on the present day border between Egypt and Sudan. Thematically as well as visually, *Nubia, Wadi Halfa and the Second Cataract*, is one of the most fascinating Kinemacolor films to survive. It is essentially a tourist film, following the journey made by some Western travellers on a Thomas Cook tour, in search of exotic sights and peoples. But whose film is it - the tourists or its subjects?



Nubia, Wadi Halfa and the Second Cataract (1911)

Kinemacolor stood out from the rest of the cinema world in several respects. Firstly, it had an exclusive on natural colour, at least for a few years. Secondly, because of its need for specialist projection equipment, it was more usually seen in theatres than conventional cinemas, such as the Scala Theatre in London, which used Urban leased as the showcase venue for the films. Thirdly, Kinemacolor attracted more of a middle-class audience than cinemas, who could pay the higher prices it demanded and found its modes of presentation and the subject matter of its films more suited to their tastes. In particular they valued its films of royalty.



Urban's greatest fortune was that he launched Kinemacolor just in time for a series of major events affecting the British royal family. The funeral of Edward VII in 1910, and the coronation of George V and the investiture of the Prince of Wales the following year, all provided colourful, patriotic ceremonial that ideally suited the Kinemacolor camera and established its global reputation.

Here is an example of Kinemacolor's regular coverage of royalty. It's the *Trooping of the Colour* in 1911, from the Allen Archives in the USA:



Trooping of the Colour (1911)



The event that was of greatest importance in Kinemacolor's lifetime was the Delhi Durbar. This was a spectacular ceremony held in grounds outside Delhi in December 1911 to mark the coronation of the new Emperor of India i.e. George V. It was the imperialist's ultimate fantasy, with its militaristic displays, its colourful parades of maharajahs and elephants, and its theme of obeisance towards British imperial power. It attracted several film companies, who filmed the main event as short monochrome newsreels.

Urban naturally trumped the competition with his plans. Employing a team of four, possibly five camera operators, he produced a multi-part colour documentary of their entire royal tour of India, with the coronation Durbar as its centrepiece. The finished work was entitled *With Our King and Queen Through India*. First shown in February 1912, two months after the Durbar, the show - and it is better to think of it as a show than as a conventional documentary film - lasted some two-and-a-half hours.



The stage at the Scala was turned into a mock-up of the Taj Mahal. Music that repeated themes from that played at the event itself was scored for forty-eight pieces, a chorus of twenty-four, a twenty-piece fife and drum corps, and three bagpipes. A commentator guided the audience, directing them on what to see, and what to think about it.

With Our King and Queen Through India was shown in different versions across the globe and had an impact unmatched by any film of its time until *Birth of a Nation* in 1915. People came to see the colour, the spectacle, the news value of it, and - in many cases - because it was the first time they had gone to see a film. There is quite a bit of evidence for this. For instance, among the many children taken on a trip to see the film because it seemed suitable, were John Grierson, Paul Rotha

and Ivor Montagu. One could trace the roots of the British documentary movement to the powerful impact the Durbar film must have made on some impressionable young minds.

Alas, like the empire it glorified, much of *With Our King and Queen Through India* is lost. For many years, all that was known of it was a few photographs and catalogue illustrations, while its story grew into romantic myth. But some of it has survived. One reel was found, in Russia, in 2000, mis-catalogued as a film from the First World War. A second was found in the collection of Kinemacolor films held in Bologna, and was restored this year. This evening we bring the two films together for the first time since 1912.



To set the scene - there were five main sections to *With Our King and Queen Through India*, as illustrated in the Kinemacolor catalogue. The colours you are seeing here are an artist's impression of the colour effect, since it was physically impossible to reproduce Kinemacolor on the printed page - it existed only in projection. The five sections were the royal party's arrival in Bombay, the state entry into Delhi, the coronation Durbar itself, a review of the imperial armies, and a pageant in Calcutta at the end of the royal tour.



It is these last two sections from which the surviving films come. Sadly we still have nothing of the main Durbar itself, and though we now have around 15 minutes of film, that is still two hours and fifteen minutes that remain lost.

Firstly we'll see *The Royal Review of 50,000 Troops* - an extract rather than the full ten minutes, as it does get a little samey after a while. And then the full five minutes of the recently discovered Calcutta pageant.



With Our King and Queen through India: The Royal Review of 50,000 Troops (1912)



With Our King and Queen through India: The Pageant Procession (1912)



The main Kinemacolor operation was located in Britain, but there were many offshoots of subsidiaries. Urban made a great deal of money out of the sale of licences and patent rights. across the globe. There were Kinemacolor operations in the USA, France, Germany, Italy, Russia, Brazil, Canada, Japan and several more. Few flourished for long. The high costs of maintaining the system, the difficulties in using it for studio work, and perhaps above all the absence of Urban as a driving force behind them,

meant that most failed as businesses.

The Kinemacolor Company of America made something of a mark for a couple of years, making mostly fiction films, such as *How to Live 100 Years* (1913) with Lillian Russell, while Kinemacolor enjoyed some measure of success in Japan under the Tenkatsu company, such as with *Yoshitsune Senbonzakura* (1914).



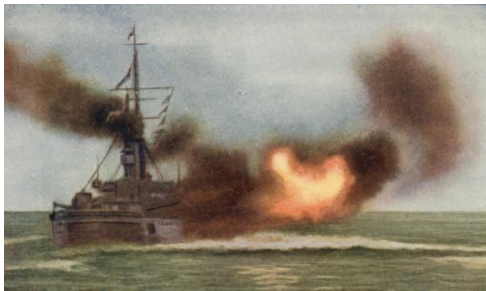
Every story must have its villain. Here is ours. He is William Friese-Greene, a British photographer and experimenter in the days of the invention of film. Friese Greene had been trying to promote his own colour film process, Biocolour, and in 1913 challenged the validity of Smith 1906 patent in the courts. The decision came down in Kinemacolor's favour, but on appeal the decision was reversed. The judge damned Smith's patent for its imprecision. He said:

The patent is I think invalid because it does not achieve the result which the patentee says it will achieve. The matter may be summarised thus: The patentee says his process will reproduce the natural colours or approximately so. Blue is a colour. He says: Drop the tri-colour blue; do not employ the blue end of the spectrum - blue or approximately blue will still be reproduced. It will not. The patent is consequently invalid.

Kinemacolor did not show blue, but claimed that it could still do so. There was the mental suggestion of blue, but not the actuality. And with that the Kinemacolor empire collapsed.

It was not an absolute collapse. The patent was invalid, but that did not mean that films could not carry on being made using the process. It just meant that the exclusivity was lost.

Urban took steps to try and save his business, but the timing was unfortunate. The court's decision came down in March 1914, at a time when Urban was already facing substantial losses following the failure of Kinemacolor in France. The First World War then killed off most international production and exhibition. Kinemacolor had run its natural course.



Urban bounced back, and became heavily involved in government propaganda. He produced a documentary feature for the War Propaganda Bureau, entitled *Britain Prepared*, released at the end of 1915 with the intention of advertising British military preparedness overseas, particularly to neutral countries, and especially the United States. It was another two-hour epic, showing munitions manufacture, troop exercises and the

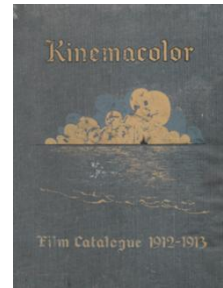
construction of a battleship, but its highlight was the quarter of the film given over to showing the British war fleet off Scapa Flow, all filmed in Kinemacolor. This was Kinemacolor's last great hurrah, and Urban was hugely angered by the British propagandists' decision to distribute the film overseas without its colour sequences, because of the technical problems in showing Kinemacolor. Consequently the copy of the film that survives in the Imperial War Museum has the monochrome scenes only.

Happily a short section of the Kinemacolor section from *Britain Prepared* has been discovered in the Allen Archives in the USA. Brief as it is, it retain a tremendous power. Apart from anything else, it is the only colour film that we know of from the First World War. Here it is.



***Britain Prepared* (1915)**

Around 1,000 Kinemacolor films were made between 1908 and 1917. An exact number is not easy to determine, since there is no official list, and Urban had a habit of reissuing films under new titles. Of that 1,000, approximately 50 survive today. What happened to the lost films? Urban had relocated his film business to the United States during the war period, and started up again in Irvington, New York, with over-ambitious plans for tapping into the new educational film market. He went bankrupt in 1925, and much of his film collection, including the Kinemacolor library, disappeared around this time, probably simply destroyed. It was useless without the right projection equipment, and the film industry had moved on in any case, with Technicolor starting to conquer all before it.



For many years all we had to see of Kinemacolor were a few test films held at the BFI. More began to emerge when archive producer Adrian Wood, working on the television series *The British Empire in Colour*, tracked down Kinemacolor films in Russian and American archives which had been misidentified, including the first Delhi Durbar film that we saw.



Around the same time a substantial collection of Kinemacolor films came into the hands of the film archive in Bologna, Italy - some twenty-five titles, which doubled the number of known, extant Kinemacolor films. They are mostly British productions, though there are at least four Italian Kinemacolor films in the collection, whose production history remains unclear at present.



Some of the films were in a dreadful state, some had suffered such deterioration that nothing could be saved. But a number have been restored, while others are being worked on - so we can expect to see more in the future. Most remarkably, this year saw the first ever DVD set of Kinemacolor films, combined with other, artificially coloured films from the same period. And they had the delightful idea of colouring the two discs red and green, in honour of Kinemacolor filters.

Restoring Kinemacolor is a complex business. It is possible to produce a black-and-white print that duplicates the original, but whose colour can then only be seen if you run the film through a Kinemacolor projector. Some screenings have been done in this way, but it is complicated to organise - and a noisy one. Standing near to a Kinemacolor projector in full flow is like being next to a machine gun.

The more practical option is to recreate the colour effect through a projection copy - either a colour print, or more usually digital copies such as you have seen this evening.



The fundamental problem for the archivist is that we can never again see Kinemacolor as it was seen 1908-1917. Kinemacolor was not just a motion picture colour process; it was an act of faith. It asked of the viewer that they saw more colours than were actually there. Scientific studies done since have demonstrated that there is a phenomenon, known as 'colour constancy', which describes the tendency of colours to retain their appearance despite changes in illumination. The brain makes up for the colours that, logically speaking, are not there. George Albert Smith intuitively understood this. In the Friesse Greene court case he had these words to say about the absence of blue:

There is a rather curious thing that crops up in everyday life about blue, and that is in the Union Jack. You will find a Union Jack is very often indeed in a shocking state; it is a sort of dull grey, red and black almost, and yet if you were to say to anybody, What colour is that? he would say, Red and blue; but when you took it down you would find there was no blue in it, it is red and black and dark grey, but no blue at all. I do not deny that you do get blue in Union Jacks, but it is called blue often when it is not; it is described as the good old blue and red Union Jack.

Kinemacolor thrived on suggestion. Its frequently patriotic or ceremonial subject matter made susceptible audiences mix up what they saw with what they believed in. What they saw then is not what we see now.

It needs to be pointed out that plain red and green filters did not produce a satisfactory colour effect, and in practice Kinemacolor operators used green/cyan and red/orange filters, with much variation according to subject matter. This colour understanding was adopted by the Bologna archivists in determining colour balance. They also used skin tones as a reference point, Kinemacolor having been acclaimed at the time for the credibility with which it depicted the human face. But all of this is a judgment call. How Kinemacolor actually looked, and was understood, is lost.



Why is it important to be restoring Kinemacolor films? Obviously there has been a gap in film history that we can now start to fill. What was previously given passing mention in histories and critical studies of colour film must now be revisited. The films themselves are beautiful; often artfully constructed, with a powerful evocative quality. To see the past in colour where we do not expect colour to be remains extraordinary.

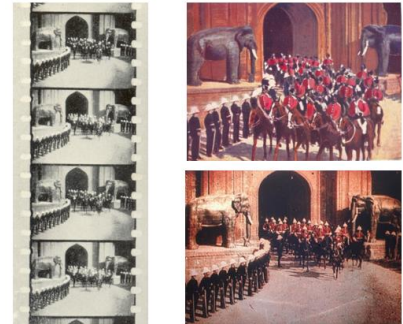
But more than this, Kinemacolor teaches us to look again. A friend of Charles Urban's once said of his film shows that they offered "something more than a mere picture show". That something more had its roots in their educational intent, an encouragement to question what we see, and to understand it all the better for having questioned it.



Urban, in his film programmes, frequently invited the audience to judge the quality of the colour that they were seeing. It was a sales gimmick, but it was also an invitation to view films actively, not passively. The film became all the richer for our engagement with it. At a time when we are bombarded with moving images of unprecedented number, it has become all the more imperative that we look, question but also value what the moving image uniquely has to tell us. It is a mark of how we understand our world.

There may have been a deep personal aspect to this. Urban had a difficult childhood, from which assorted conclusions might be drawn, but perhaps the major trauma was the loss of the sight in one of his eyes in a baseball accident, when he was fourteen. His left eyeball was saved, but he could never see out of it again. In Charles Urban we have someone with just the one functioning eye, profoundly grateful for the gift of his remaining sight, always looking out to see something more.

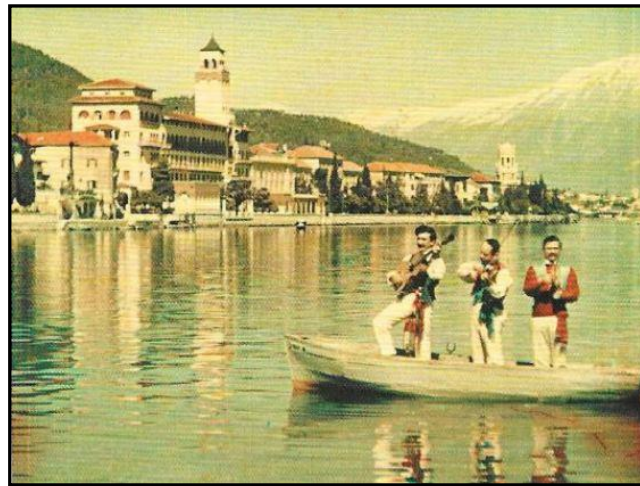
There are more Kinemacolor films out there, if not many. The crucial thing to realise is that they will not appear to be colourful, but black-and-white. The colour in Kinemacolor only appeared in projection. Several archives around the world hold black-and-white films with a curious flicker about them, which appear to run at half-speed. They are Kinemacolor, and we must re-double efforts to find them. Here are images of some of the lost Kinemacolor films to whet our appetites:



The BFI is showing the way, because our penultimate film is a 1911 title, found recently by archivist Steve Foxon, on eBay. It is called *Sunsets in Egypt*. It has not been converted to colour as yet, so here is a short extract from the latest Kinemacolor to be discovered, in its untreated black-and-white state. I should warn you, therefore, that there are flashing images in the upcoming film:

Sunsets in Egypt (1911)

Always leave the best to last. The most celebrated Kinemacolor films showed spectacular news events. News is good, but it is not always easy to manage it. The most successful Kinemacolor films, aesthetically, were those where the operator had complete control over the subject: where the location was beautiful, and where the subjects moved past slowly. All of these requirements come together in our final film, which we are showing in its gorgeous eight-minute entirety, *Lake Garda, Italy*, made in 1910. And thank you.



Lake Garda, Italy (1910)

Films shown

A Scottish Lass (c.1908) BFI National Archive

The Harvest (1908) Cineteca Bologna [extract]

A Run with the Exmoor Staghounds (1911) Cineteca Bologna [extracts]

Nubia, Wadi Halfa and the Second Cataract (1911) Cineteca Bologna [extract]

Trooping of the Colour (1911) John E. Allen Inc

With Our King and Queen through India: The Royal Review of 50,000 Troops (1912) Russian State Documentary Film & Photo Archive [extract]

With Our King and Queen through India: The Pageant Procession (1912) Cineteca Bologna

Britain Prepared (1915) John E. Allen Inc

Sunsets in Egypt (1911) BFI National Archive

Lake Garda, Italy (1910) Cineteca Bologna

Images courtesy of British Film Institute, Stephen Herbert, Nicholas Hiley, L'Immagine Ritrovata, National Science & Media Museum and the author