

# ELECTRIC CARBON ARC LAMPS

## Memories from 'The Box'

Stephen Herbert

My introduction to carbon arcs was in 1969 when I answered an advertisement: Trainee Projectionist Wanted, at the Imperial Cinema, Clapham Junction, London. If you know the film *The Smallest Show on Earth* (1957) just think 'Bijou Kinema'. I climbed the outside iron staircase to the 'box', put on my 'intelligent' face and entered. One of two big 35mm projectors was running, the Chief's heavily pregnant wife Tracey was sitting against the back wall in a cinema seat purloined from the Circle, while their yelping dog skidded on the oily floor and Stanley (the Chief) peered through a porthole. Film sound rattled from a tinny monitor speaker, the projector rumbled and whirled as its arc lamp hissed, and the whole effect was of a cacophonous, grimy, and rather magical mechanical wonderland. The projectors were early 1930s Ross GC1s, on Western Electric bases of the same period with later Kalee 'President' arc lamps. I was hooked and started work there next day; but I'll sidestep the full story and concentrate on the subject, the arc lamps.

The Kalee history goes way back to 1888 when Abram Kershaw set up a scientific instrument business in Leeds. Products included magic lanterns and, from 1910, cinema equipment under the Kalee name (from Kershaw, A, LEEds). Eventually the Kershaw Group was acquired by Gaumont-British and equipment bearing the name Gaumont-Kalee included cinema projectors and their arc lamps. Kalee machines were very common in British projection rooms for decades. At the Imperial, the earlier arcs that would have been fitted to the black Ross projectors had evidently been retired, and the khaki-coloured Kalees fitted as a modern, if aesthetically unpleasant, substitute.

They used two horizontal rods of carbon sheathed in copper, with a very bright flame in between. The thicker carbon was 'positive', the slightly thinner 'negative'. The carriage gripping the positive rod was arranged in front of a large elliptical mirror, which had a centre hole to accommodate the rear (negative) carbon, protruding from its clamp behind the mirror. Control knobs below the arc door allowed for the motorised carbon 'feed' to be adjusted, and further knobs protruding from the back allowed for the carbon holders and mirror angle to be tweaked to keep the light central. A mini periscope projected an image of the arc flame onto a tiny screen above the lamp house door, so the shape and position of the arc crater could be seen at a glance. If the screen picture became a bit blue or brown at one corner or at the centre, the projectionist would twist a control or two slightly to get the flame back in position and the light 'clean'. The rods gradually burnt away as the film was projected, and after each reel they were moved in their clamps (using pliers – they were hot!) towards each other, until each piece was too short to run a whole reel and was then replaced. A finished carbon remnant was removed with the pliers and flung into a sand bucket. If a projectionist wasn't sure whether a piece of rod would last for the next reel, as an economy measure he'd sometimes chance his luck and use a 'saver' – a short steel tube clamped in the jaw into which the 'stub' would fit, allowing the flame to continue right to the end of the disappearing carbon. This is what Stanley had done several times during the new musical *Sweet Charity* (1969) – and came unstuck.

There were no more full rods, precious few stubs, and lots of film still to run. I was instructed to cycle up the hill to the big Granada, and borrow a box of carbons. The Chief there gave a sour look, shaking his head: "Stan already owes me a box. Sorry." Panicking, I jumped back on my bike and pedalled furiously to the ABC Putney, as I vaguely knew the projectionists there, and they obliged. Cycling back as fast as I could, eventually I careered into the alley beside the Imperial and spotted



*Kodak Instamatic flash snapshot of the Imperial Cinema projection box taken by Stephen Herbert, 1969*

Stanley leaning over the top of the iron stairs in desperation, "Where the ...", etc. Following a brief explanation while he quickly clamped fresh carbons into the lamp house with moments to spare, I was forgiven for the delay and after the changeover Shirley Maclaine was able to finish her bitter-sweet performance without a pause.

The burning carbons deposited a white powder which, in theory, was sucked up a thick pipe from the top of the arc and out through the roof. That worked reasonably well, unless a pigeon or two, seeking warmth, had nested atop the pipe's flue, which they had. The thin sheath of the carbons' copper cladding melted at the burning ends and dripped into a cast-iron tray in the bottom of the arc housing. These splodges of copper, collected by Stanley and sold for scrap, provided the cash for our communal teabags – a projection box tradition then.

The arc was 'struck' by switching on, and then moving one of the carbons until it touched the other. With a 'crack' as they were then pulled apart, the resulting spark instantly became a flame. The Imperial's ageing electric system wasn't happy. The current was converted from AC to DC by the rectifier, a huge glass vessel partly filled with mercury that sat in a cage in a small adjoining room, pulsing violet light like something from a Frankenstein movie. The 'safety cutout thing' on the wall had stared clicking open fairly frequently until Stanley, fed up with that, jammed it closed with a broom handle. During a changeover on *The Belles of St Trinian's*, the click became a very loud bang. Anyway, there was no way we were going to be able to fix it and the audience queued for their money back. Later, two electrical engineers worked through the night replacing switch boxes and cables. The new switch boxes, one on the back of each arc, had five switches so the current could be brought on gradually, without a big surge.

After three months at the Imperial I spent a year with Classic Cinemas, using more recent illuminants, including (rare) Philips pulse lamps, then started at the National Film Theatre where NFT1 still used carbons, in its Peerless Magnarcs. These were changed in 1971 for Xenon lamps – probably just as well as NFT1 was still licensed to show nitrate film – and a big part of a projectionist's job disappeared. The last cinema I worked for that had carbon arcs was the New Victoria, with Kalee lamps matched to the correct projectors. After a short stint there in 1973 I left the business for 16 years.

The Imperial closed briefly in 1973 and reopened as the Ruby, finally closing in 1982 when it was demolished.