

**MAY 07**

## **THE FIRST ESCALATORS**

**by Antony Badsey-Ellis**

Most readers of *Underground News* will be aware that the first escalators on the Underground were installed at Earl's Court in 1911. A recent find at the National Archives has provided a little more information on these interesting machines.

The escalators were made by the Otis Elevator Company of New York, and became known as the type A. They had an angle of 26° 23' 16½", and linked the Piccadilly Line platform level with a subway beneath the District Railway platforms. Stairways led up from this subway onto the platforms. The left hand escalator (in the ascending direction) could only be used for ascending passengers and had a 'shunt' landing at the upper level, forcing passengers to step off sideways. This was to prevent them from getting trapped in the mechanism – it would be some years before cleated steps and end combs would be introduced. The right hand escalator was reversible, so that there would always be a working escalator for use by ascending passengers, but was primarily intended for descending. This machine necessarily had shunt landings at both ends.

The Board of Trade (BoT) inspected the escalators on 29 September 1911, before they were brought into public use. The inspection report started by noting that they were the first such devices installed for railway use in the country. Although Seaforth Sands station on the Liverpool Overhead Railway had had a 'moving stairway' installed a decade previously, the machine did not have the stepped appearance of what we would regard as a true escalator; rather, it was a steep travolator. The BoT regarded the Earl's Court machines as experimental, but remarked that if they proved successful then the London Electric Railway (LER) intended to install more at other stations.

The escalators were installed in a cast-iron shaft 16ft 4ins (4.98m) in diameter. The angle has been a puzzle to historians, with different views expressed. One view is that the escalators were made to fit the shaft, while another suggests that the escalators were a run-on from a German order and so were constructed at the same angle to keep the cost down. Whatever the reason, it has been a source of frustration to successive engineers as they are now non-standard.

The escalators were placed 3ft 6ins (1.07m) apart between centre lines, and had steps that were 4ft (1.22m) wide, and 18 inches (45.7cm) deep, with an 8 inch (20.3cm) riser. The vertical rise was 38ft (11.59m), and when stationary 57 steps would be on view. Moving handrails were provided on both sides of each machine, as would be expected. The steps were made of fire-proofed American oak, and the balustrades were of teak. All of the rest of the equipment was made of metal. A single chain centrally located under the steps connected and moved the steps, and was driven at 90ft/minute (27.45m/min) by a 50hp motor, via reduction gearing. Each escalator had two motors: one for regular use, and one for back-up purposes. The motors were located in a machine room under the upper landing. Power was supplied from the District Railway current rails, and changeover switches allowed this to be taken from either the 'up' or the 'down' lines.

The BoT suggested that three people could stand on each step, allowing a maximum flow of 10,800 passengers per hour – rather more than would be achievable in practice! In the event of an emergency switches were provided at the top and bottom of each escalator which, when operated, would stop it immediately. Restarting could only happen from the machine room. The BoT was impressed with the equipment, describing it as ‘exceedingly ingenious ..... executed with the greatest possible care’ and noted that ‘every precaution has been taken to avoid any risk of accident’. However, they gave permission for them to be used for a period of one month, after which another inspection would be required. The LER was asked to record the daily use of the machines, and keep the lifts and stairways available for passengers who preferred to avoid the new devices.

For the first day of operation, 4 October 1911, the LER employed one of their staff, a man by the name of ‘Bumper’ Harris, to ride the escalators and demonstrate their safety. Harris had been clerk of works for the installation, and had an artificial leg. If he could cope, reasoned the company, then it would show nervous passengers that anyone could. Unfortunately some passengers speculated about how his leg had been lost and took the lifts. (It had been crushed some years earlier whilst working on the Underground tunnels). The LER made much of their new machines, erecting large signs directing passengers to their newest marvel. Along with Harris, other staff announced the presence of the escalators to all in the station, and apparently many people visited Earl’s Court for the sole purpose of a ride. The report of the second inspection was issued on 4 November. It recorded that in the first week of operation, nine dresses had been torn, one finger had been pinched, and a lame passenger had fallen from his crutches. No accidents occurred in the following three weeks. In part this was due to dress guards being installed along the length of the descending escalator and at the top and bottom of the ascending machine.

In the first month some 550,000 people travelled on the escalators, averaging 18,000 per day with a maximum of 24,500 on one day. The BoT inspector, H.A. Yorke, concluded in his report that the machines were safe (amended to ‘reasonably safe’) and approved their use on a permanent basis. However, in 1913 a boy badly injured his hand on the escalator, apparently on the dress guard of the ascending escalator (presumably his hand was crushed between the guard and the balustrade at the point where the upper guard commenced). His solicitors communicated with the BoT, asking if they had sanctioned the guard, if they were aware of the emergency stop lever at the top of the escalator, and if they had required that a member of staff be in attendance at all times next to the lever. The BoT wrote back stating that the dress guard was in place when the machine received its final sanctioning. The “Illustrated London News” pictures (when the escalator opened) did not show the guard extending down the slope of the escalator, a point that the solicitor noted. He demanded to know whether the plans (which the BoT refused to produce) showed the guards. The BoT started to get rather annoyed at the questioning by the solicitor, and decided to tell him that they had nothing more to add. They did inform him that the guard did not appear on the plans originally submitted by the LER. However, their view was that the plans were for information only and the inspection was the key point for permitting the use of the escalators.

Unfortunately (for us) the file ends at this point. It would appear that the solicitor decided that there was no point in writing to the BoT any more, and hence their records cease. It would be interesting to know the outcome of the story.