

Strands of Incandescent Carbon

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We are approaching the centenary celebrations of Mr. Swan's invention of the incandescent lamp which was patented by Mr. Edison and thus popularly attributed to him. Researches into the recorded events surrounding its earliest use in the theatre have produced some interesting pictures and comment from contemporary journals which suggest that Joseph Swan was the real father of electric stage lighting.

"The incandescence system of lighting is especially applicable to the illumination of theatres and other places where scenic effects have to be produced, and where the lights both in the auditorium and on the stage have to be turned up or down in accordance with the effects desired to be produced".

Thus wrote a far-seeing, but un-named contributor in the October 21st, 1881 issue of the journal *Engineering*. The new offices of this journal in Bedford Street, Covent Garden, were barely a 100 paces from the new Savoy Theatre which had opened with Joseph Swan's incandescent lamps only 11 days before, but the quotation comes from an article reviewing what was surely the second, although temporary, theatre installation.

"... to Mr. Swan, of Newcastle, has been entrusted with what must be acknowledged to be the *most important* lighting installation at the Paris Opera, for it is by the Swan light that both the auditorium and the stage will be lighted, and these two together constitute the Opera house, all the other parts being, after all, but accessories".

There were 600 Swan lamps in three circuits of 200 for the great central chandelier, and another circuit of 200 as footlights. Each circuit of 200 twenty candle power lamps had its own Siemens W¹ alternating current machine with the field magnets being energised by another Siemens D⁶ machine. The total motive power required was 75 horsepower. The intensity of each circuit could be regulated to five different intensities by resistances in circuit with the field magnets.

The "other parts" of the Paris Opera were lit by six other electric light systems including 632 eight candle power Edison incandescent lamps used to illuminate "the grand foyer or saloon, which is probably the *most beautiful* feature of M. Garnier's building". The only incandescent system was the Maxim, with 76 lamps lighting ante-rooms at each end of the grand foyer. The remaining systems, all variants of the carbon-arc were the Brush, Werdermann, Jablochhoff candle and Jasper-indirect. The whole affair must have been a gigantic fit-up, even by today's standards, for it was a trial scheduled to remain only for four weeks. It is not surprising that the various installations were not all completed in time for the gala given at the Opera House on Saturday, 15th October for the Electrical Congress when only the 38 Brush carbon arc lamps on the grand staircase were working and an apology was made

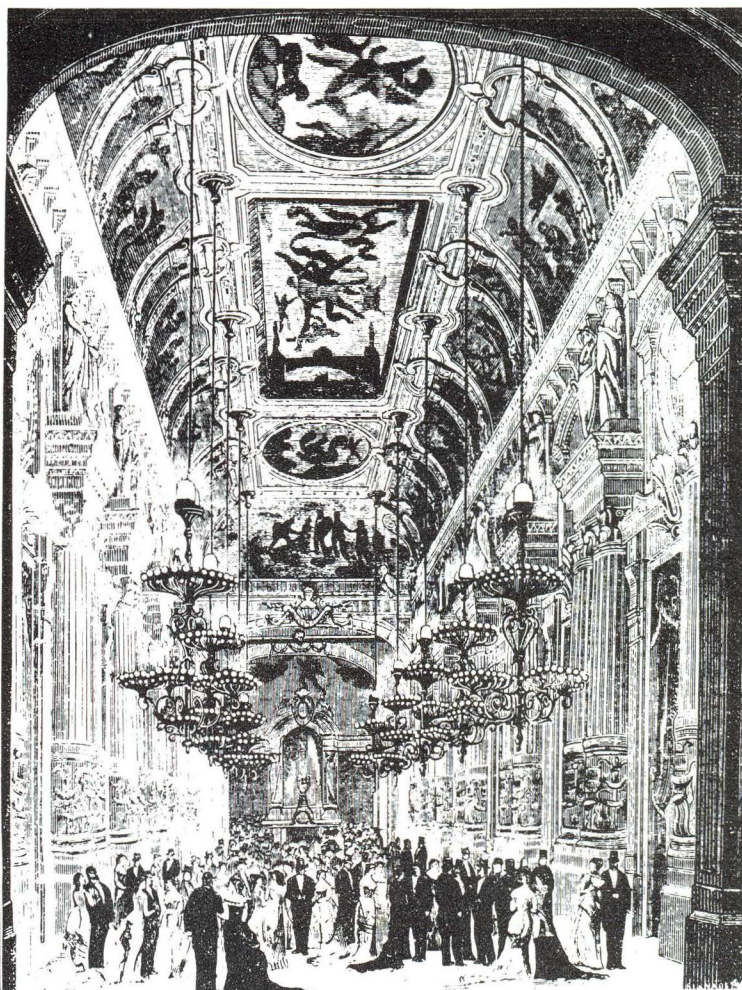
for the indifferent performance of the Maxim incandescent lamps which, in the haste to be before the rival Swan and Edison incandescent systems, were supplied by an insufficient number of Faure accumulators.

All was not well at the Savoy Theatre either; the auditorium was lit by Swan lamps from the opening of the theatre on October 10th, 1881, but the stage lighting installation was not working until later and was then described in the December 31st issue of the weekly journal *The Electrician* as follows:-

"On Wednesday, December 28th, 1881, for the first time in the history of the

"Owing to the resistances of the lamps not being identical the state of incandescence varies, but this will no doubt be remedied. The frightful accident at Vienna induced Mr. D'Oyley Carte to push on his idea of electric lighting for the theatre as fast as possible, hence we may take it for granted that shortcomings were unavoidable, but that they will disappear within a short time".

It is not surprising that there were some teething troubles as a total of 1158* Swan lamps were involved, 114 in the auditorium, 220 for dressing rooms, corridors, etc. and 824 for stage lighting. Messrs. Siemens



The grand foyer of the Paris Opera lit by Edison's lamps.

electric light, a theatre was by its means lighted throughout. The thanks of playgoers must be given to Mr. R. D'Oyley Carte for the enterprise he has shown in adopting this cool and wholesome luminant to light his new Savoy Theatre. We had previously witnessed a rehearsal of the lighting experiment, and felt quite sure of its success practically".

The same journal a fortnight later gives hints of further problems -

Brothers and Co. were the main contractors and supplied six W¹ alternating current machines. There is a remarkable similarity between the number of lamps, and machines, which were missing from the stage end of the Savoy in October and those scheduled for the Paris Opera temporary installation!

* TABS Vol. 20 No. 2 (now out of print) contains a full description of the Savoy installation originally published in *Engineering*, March 3, 1882.