CIBSE HERITAGE GROUP

PUBLICATIONS WITH INFORMATION ON THEATRES, OPERA HOUSES & MUSIC HALLS

and on lighting, heating & ventilation & stage machinery

1975 An architectural & social survey
THEATRE AND PLAYHOUSE
AN ILLUSTRATED SURVEY OF THEATRE BUILDING FROM ANCIENT GREECE TO THE PRESENT DAY

RICHARD AND HELEN LEACROFT

1984 With detailed cut-away isometric drawings and chapters on lighting, acoustics & stage machinery.
1988 With detailed cut-away isometric drawings and information on stage machinery, fireproof construction, ventilation and use of gas.
1972 Section with illustrations of Music Halls and their elaborate chandeliers
1967 Paper on the Chicago Auditorium Theatre which opened in 1889 and featured air washer ventilation, steam systems, hydraulic stage machinery & decorative lighting
2010 Describes a visit by the CIBSE Heritage Group to Wilton’s Music Hall in Tower Hamlets (opened in 1858) then undergoing refurbishment, originally lit by a gas “sun-burner” and heated by a Grundy coal-fired warm air furnace.
1992 Records a visit to Broomhill in Kent by the CIBSE Heritage Group to view a rediscovered Victorian private theatre, built in 1896 with a seating capacity of 400 and with the original stage lighting control boards intact
1999 Contemporary photographs and descriptions of some 78 New York Theatres from 1873 to 1934 (many now demolished)
THEATRE LIGHTING IN THE AGE OF GAS

TERENCE REES

1978 Deals with all types of gas lighting and early electric lighting
1978 (USA) describes candle & gas lighting
1968 In its time a standard textbook on the subject
1979 Very detailed entry on “Stage Lighting” and with information on “Acoustics”
22 February, 1865 Original letter from the Director of the Strand Music Hall to the Engineer Wilson W Phipson regarding ventilation & warming
(From the CIBSE Heritage Group Phipson Collection)
Empire Theatre

Ventilation

Instructions for management.

1st - Attention to be paid to the gas engine, and fans, and gearing for driving same, that they are kept in proper working order, all working parts being kept clean and well lubricated. Any defects that may be found to be reported at once to the manager.

2nd - The casings of the fans and fan blades to be scraped and painted once a year if found necessary.
1992 (USA) with drawings of the ventilation for Vienna, Criterion, New York Metropolitan & Pueblo Opera Houses, Carnegie Hall, NY Music Hall, Sorbonne, Chicago German Theatre, Boston Symphony & Majestic Theatres (and Becontree & Streatham UK cinemas)
1977 (USA) Book of over 600 pages (pages too large to scan) dealing with aspects of theatre design including acoustics and seating arrangements (to achieve clear line of sight)
THE
PLEASURE HAUNTS
OF LONDON
during four
centuries
by
E. Beresford Chancellor

London
Constable & Company Ltd
Houghton Mifflin Company
Boston & New York
1925
Opera Houses of the World

1996 Modern large colour photographs & contemporary drawings
1995 Story of the restoration of Sydney’s Capitol Theatre
c.1990 Story of the restoration with photos of the original gas foot lighting equipment and the electric distribution board which date back to 1903
Drama By Daylight

Brian Roberts introduces the first in a series of three articles which present a pictorial history of lighting for the theatre and stage through the centuries.

Act I: The First 2000 Years

The house lights dim, the curtain rises to show an illuminated stage, another play begins. This is the modern theatre. But its origins probably go back to the religious rites of the earliest communities and some say derive from the funeral ceremonies of the early Egyptians (c3000 BC). However, it is generally accepted that the first great theatrical age was that of Greece in the 4th century BC.

Dionysus and Daylighting, 4th century BC (Figure 1)

It was in Greece that plays and festivals in honour of Dionysus (the wine god), were first performed in special buildings or areas set aside for the purpose. The most famous and best preserved of these is the Greek theatre at Epidaurus which was in the open air and relied on daylighting. Starting time was at daybreak and citizens would often sit through as many as five plays.

Figure 1: Open-air Greek theatre at Epidaurus (4th century BC)

Colosseum and Velarium, 1st century AD (Figure 2)

The Romans were responsible for the widespread introduction of the amphitheatre as at Pompeji, Nimes, Arles and in Rome where the Colosseum could easily hold 40000 people. Their size and height posed tremendous architectural problems and the Romans devised ingenious solutions to handle large audiences and provide for their comfort.

At the Colosseum, to control daylighting and provide shade, canvas awnings — the "velarium" — were hitched to masts in the manner of ships' sails and could be stretched across the top of the arena by a squad of sailors.

The Romans were masters of hydraulics and water engineering and could flood the arena for mock sea battles and aquatic events.

Awnings at Aspendos, 2nd century AD (Figure 3)

Theatre design was revolutionised by the Romans. They transformed the prepared landscapes of the Greeks, designed to seat large audiences and ensure good acoustics, into works of architecture. Seating areas were provided on vaulted ramps, with passages and stairs behind to provide access. Vitruvius gave detailed descriptions of "several acoustic calculations and contrivances" and "prescriptions as to the size and proportions of the stage and the plan for spectators".

The stage was roofed over while here also the spectators were protected from the glare and heat of the sun by canvas awnings. On hot days, slaves would sprinkle the audience with showers of perfumed water.
FOOTLIGHT PARADE

Brian Roberts continues his pictorial history of lighting for the stage. As time goes by, candles are used to illuminate those that "want to be seen" at the theatre and are also suspects in the demise of a venue.

Act II: 1650-1825

Figure 10: The Comede Francaise (1670)

French Farce, 1670 (Figure 10). This is part of a painting of the Comede Francaise in a Moliere farce. In the full version there are six candle chandeliers over the stage and a row of 34 candles, acting as footlights, may be counted. A 1673 print of a Moliere play at Versailles shows five elaborate chandelier fittings but no footlights.

A drawing of a German stage around the same period again has chandeliers but no footlights. The first illustration of footlights in use on an English stage is that to be found in the frontispiece to "The Wit, or, Sport upon Sport", by Francis Kirkman, published in 1673.

Smoking Candles at Drury Lane, 1674 (Figure 11)

This drawing shows the auditorium and the stage lit by candles. The audience came as much to be seen as to see and the "house lights" were not dimmed. Gentlemen of quality were permitted to sit on the stage (which gave them direct access to the actresses' dressing rooms). The smoke from the candle chandeliers over the stage was a nuisance, but considered less so than from oil lamps. Samuel Pepys noted in his diary that the actresses made quite a show by candlelight. He also complained that the candlelight gave him a headache. Footlights can be seen in the drawing and were now in general use, allegedly to enable the dancers' legs to be fully appreciated. With all these open flames exposed, fire was a major hazard. Oil wicks were often floated on water to reduce the risk - hence the theatrical term "floats" for footlights. (The first Drury Lane was gutted by fire in 1672. Rebuilt and expanded in 1794, the third version was also destroyed by fire in spite of four large "sprinkler tanks" in the roof.)
THE GASLIGHT ERA

Brian Roberts concludes his journey through the history of theatre lighting with a look at how engineers and technicians finally took over centre stage. Act III: 1820-1925

According to Glyne Wickham, the first Professor of Drama in Britain: “It can be argued that most of the major changes that oversaw the theatre during the nineteenth century owed more to engineers – civil, mechanical and optical – than to actors or dramatists.”

He maintained that, “If such a claim is thought to be perverse, it has to be remembered that the candles and oil-lamps, which had provided the sole form of lighting in every theatre until the end of the eighteenth century, were banished first in favour of gas and limelight and then in favour of electricity.”

Displaying the Footlights; c1825 (Figure 19)

Before the gas or electric light, ingenious devices were invented which made it possible to lighten or darken the stage: “Although each candle or lamp could be masked or smudged out, this was obviously a slow and laborious process, but when numbers of lights were mounted together the whole fitting could be raised or lowered through a slot in the stage, or when mounted vertically behind each wing, they could be turned away or shuttered in a single movement.

It was not easy to darken the auditorium, although this was partially achieved in some instances by withdrawing the candelabra or chandeliers through the ceiling, as done at the Comédie Française and La Scala.”

In the Limelight, 1873 (Figure 20)

The building of the Albert Hall commenced in 1867. It was a huge red circular building with a dome of glass and iron. This picture shows the line or calcium light in use.

Two cylinders of compressed gas (one of hydrogen and one of oxygen) were directed against a column of lime, which was then heated to produce a great incandescence. Developed by Drummond in 1816 it produced a brilliant white light “of a quality so excellent for stage purposes that...we tend to associate it with the theatre and nothing else”.

In The Stage magazine of 1883 it was reported “Limelight appears to be likely to hold its own in theatres with more favourable results against electric light than coal-gas”