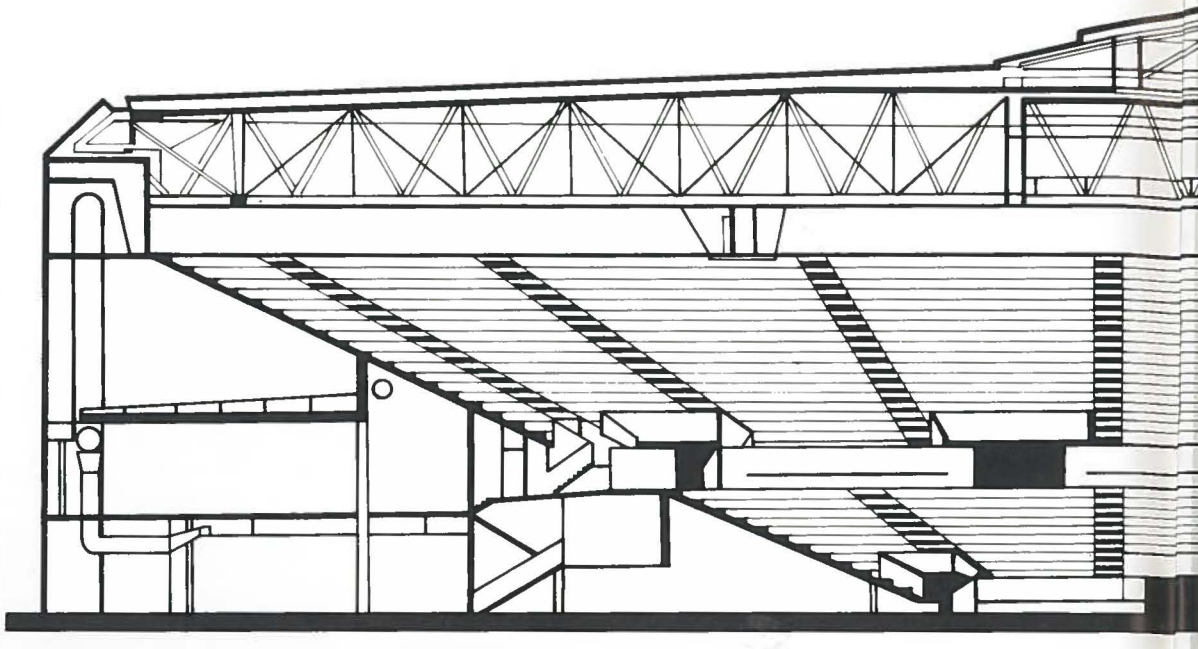

# FLYING EQUIPMENT IN THE SYDNEY ENTERTAINMENT CENTRE

by D.C. Irving

I have been invited by your Editor to provide him with some comments on the recently completed Sydney Entertainment Centre. A project of this size really deserves a book to itself and no doubt will get one eventually but hopefully it is sufficient on this occasion to give a brief description of the building with some reference to its adaptability and the equipment provided. It can be reasonably described as one of the largest adaptable theatres anywhere. The building itself covers around 7,500 sq.m. and has over 20m clear span in the centre. The seating maximum capacity is 12,000 arranged in a horse-shoe shape, i.e., the building has a definite visual orientation in one direction, in contrast to other buildings of this size in e.g. America and more recently the Hong Kong Coliseum.

As can be seen from the diagrams and accompanying captions (plagiarised from one of the official handouts), the auditorium can be arranged to provide the full 12,000 seats with a small open stage, 10,000 seats for arena presentations and then can be sub divided using painted canvas divisions to provide 7,000 seats viewing a thrust stage form or 3,500 seats in proscenium form.

Eleven thousand of the seats are proper upholstered seats with armrests arranged in 29 rows around the two sides and one end of the stage. The remaining seats are similar in type, on transportable units arranged on the arena floor level when required to provide additional seating for rock concerts, convention speeches or other presentations which use only a small amount of the stage area.

As can be seen from the drawings the seats are in a single tier, divided about half way back by a wide aisle. This aisle is accessible via a number of generously sized entrances and short stairways leading from the main foyer area which surrounds the auditorium, one floor above street level.

The arena stage is at ground level with a large storage and scene dock area immediately adjacent. Nine metre high sliding doors in inner and outer auditorium walls make 'get ins' very easy. It is in fact possible to drive a full-sized semi trailer from the street right in onto the arena floor.

The roof structure is roughly 100m clear span each way and rests on a 'D' shaped concrete box girder around the perimeter of the building. In the early days of design and construction no real thought was given to other than sporting events and entertainment of a type not requiring major hanging facilities. For a number of reasons, these plans were altered to allow for the more varied modes of operation and it was then immediately apparent that the thrust or proscenium forms both required some scenery flying and also provision for lighting equipment other than the 'U' shaped gallery just below the roof truss line. As counterweighting is obviously impractical then power flying became essential even though funds would only permit limited quantities of hoists with simple direct operation.

After lengthy discussions and negotiations all around and the inevitable tendering procedures required by Government funded projects, Telestage were selected to manufacture and supply the necessary flying equipment. A technical summary of the equipment will form the conclusion of this article. Meantime we explain that the bulk of the scenery handling is by three speed switched pole motors driving 20 four-line scenery battens and 18 single spotlines. A major difficulty was that a full grid could not be installed as the resulting statutory design loading would have necessitated substantial increases in roof structure, so a compromise was made, by using four grid steels above the stage each with an adjacent catwalk giving access to the various lines and pulleys. As financial limitations also precluded what were regarded by many as a full set of lines, the compromise was to use spotlines with an arrangement of diverter pulleys and cross beams enabling these lines to be set anywhere over the stage area, albeit with some difficulty. In addition to the three speed units there are several larger capacity fixed speed hoists which are intended purely to simplify the rigging of simple masking for the proscenium mode, giving a complete standard set of black drapes. The flying gear is completed by a fully variable speed winch which operates the house curtain.

During the construction period the NSW Department of Services which is responsible for fire regulations and licencing procedures, decreed that when the proscenium was used, then the stage should be enclosed on three sides by a fire barrier and provided with an automatic smoke hatch above. This in turn meant that the house curtain had to double as fire curtain. It is therefore backed with ceramic cloth (heavy and expensive!) and has an alternative mode of operation via a clutch and hydraulic buffer assembly so that it can automatically descend in emergency conditions.

I mentioned earlier the problem of additional lighting. We finally decided that five lighting bars would be adequate for most purposes and it should be possible to arrange them transversely above any part of the stage and, on occasions, arranged two each side running up and down stage and one above the orchestra pit line. There was no easy way of achieving this result without a lot of mechanical knitting and our eventual solution was to use giant sized self-climbing trusses which we believe caused considerable comment when the prototype was on test in Bury St. Edmunds. These self climbers are provided with trolleys and therefore can be lowered to the ground, relocated and again raised with relative ease. The biggest problem is with the wiring design for the stage lighting which had already been completed and we were unable to arrange centre feeds for lighting cables, hence the very heavy bunches of tripe which result, are very unwieldy