be satisfactory for this application, and that air castors, (used to move heavy loads on an air film, similar in principle to the hovercraft) would produce the ideal solution. Although air castors have been used to move seating units in the past (particularly in Television Studios) this is by far the largest installation of its type to be completed in this country.

The construction of the towers provided even greater problems for the Tele-Stage design team. The stepped profile of the floors made it impossible to run continuous beams in the optimum positions while maintaining the regulation headroom, and severe restrictions were placed on the positions of the bracing members by the Architectural design of the towers. When the designs were complete, it was found that the overall weight of each tower when crossing the stage would cause unacceptably high point loads on the semi-sprung stage floor and so a further design exercise was required to reduce the weight of each unit to around 10 tonnes. There can be no doubt that the towers have been a great success. From the stalls the audience is completely unaware that the walls of boxes can glide away and re-settle in a completely different configuration. The only clue to the mobile nature of the structure is the plates over the joints in the gangways behind the boxes. Even when standing on the highest level, some 6 metres above the stage floor, there is no sensation of being on anything but a permanent structure.

While the towers are impressive structures when static, to see them in motion is quite unbelievable. Only the slight hiss of air gives away the fact that the ten tonne monster can be moved by a single man, and four can manoeuvre and position it with great accuracy.

In the proscenium form, the towers are used to reduce the width of the hall at the stage front. However, the problem of how to separate the flytower from the auditorium without creating a barrier in the concert form had to be resolved. The proscenium side walls have been built as four hung steel doors which retract into slots in the side walls of the auditorium. The safety curtain guides are mounted on the leading edges of two of the panels. When the proscenium is in position, the moving guides link up with fixed guides above, and the safety curtain operates in the traditional way.

The final element used to create the transformation from one form to another is the ceiling to close the flytower. This consists of three panels which pivot into the vertical position and are there raised into the flytower on counterweight sets. The ceiling both enhances the illusion of a single space room in the flat floor format, and acts as an acoustic reflector for orchestral concerts.

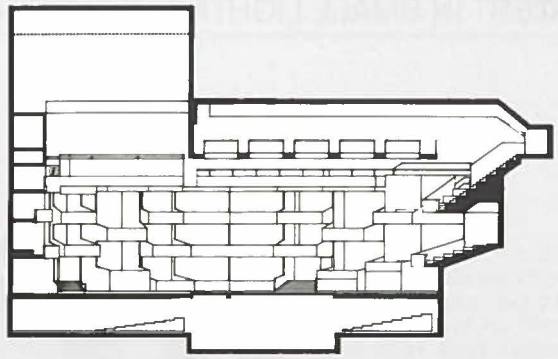
Other equipment provided includes a full counterweight flying system, motorised suspensions above the centre of the auditorium, and acoustic "banners" (vertically drawn velour curtains) which are used to adjust the acoustics of the room.

The success of the hall can be demonstrated by the wide range of shows and events that have been staged during the opening months. These include Kent Opera, Northern Ballet, a season of touring drama, the Royal Liverpool Philharmonic, televised snooker, a Chamber of Commerce trade show, banquets and a wide range of artists including Jack Jones, Jasper Carrott, David Essex, Cannon & Ball and many more.

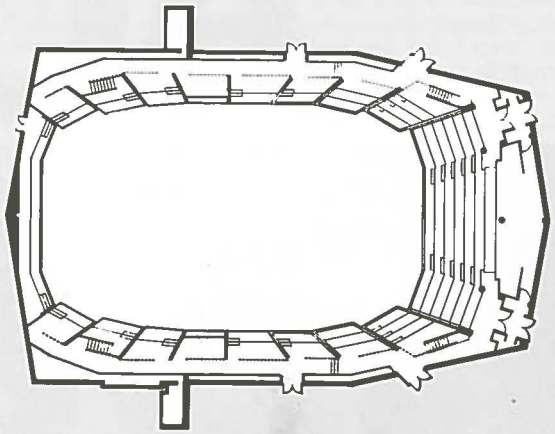
Oh, and the lighting control? 120 way Duet. ■

Design Team

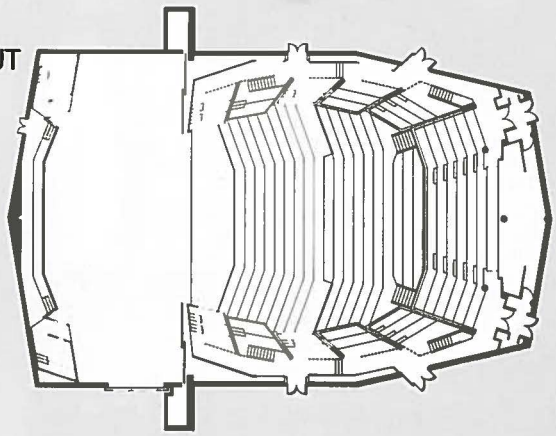
Architect: RHWL Partnership (Peter Howard, John Kennett, Tony Williams)
Theatre Consultants: Theatre Projects Consultants (Richard Pilbrow, Director in charge, John Whitaker, Project Leader, Russell Johnson, Acoustician)
Acoustics Consultants: Theatre Projects Consultants in association with Artec Consultants Inc
Engineers: Ove Arup & Partners
Quantity Surveyors: Gardiner & Theobald



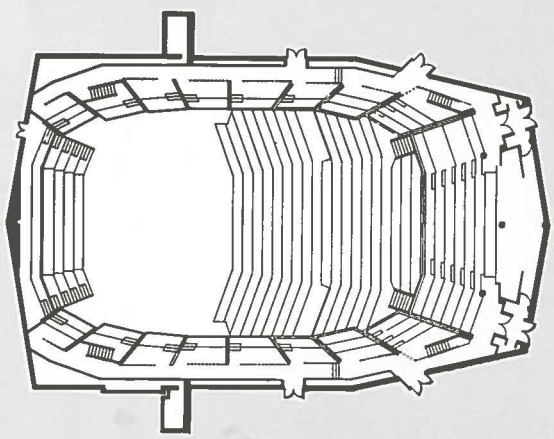
FLAT FLOOR



PROSCENIUM LAYOUT



CONCERT LAYOUT



ARENA LAYOUT