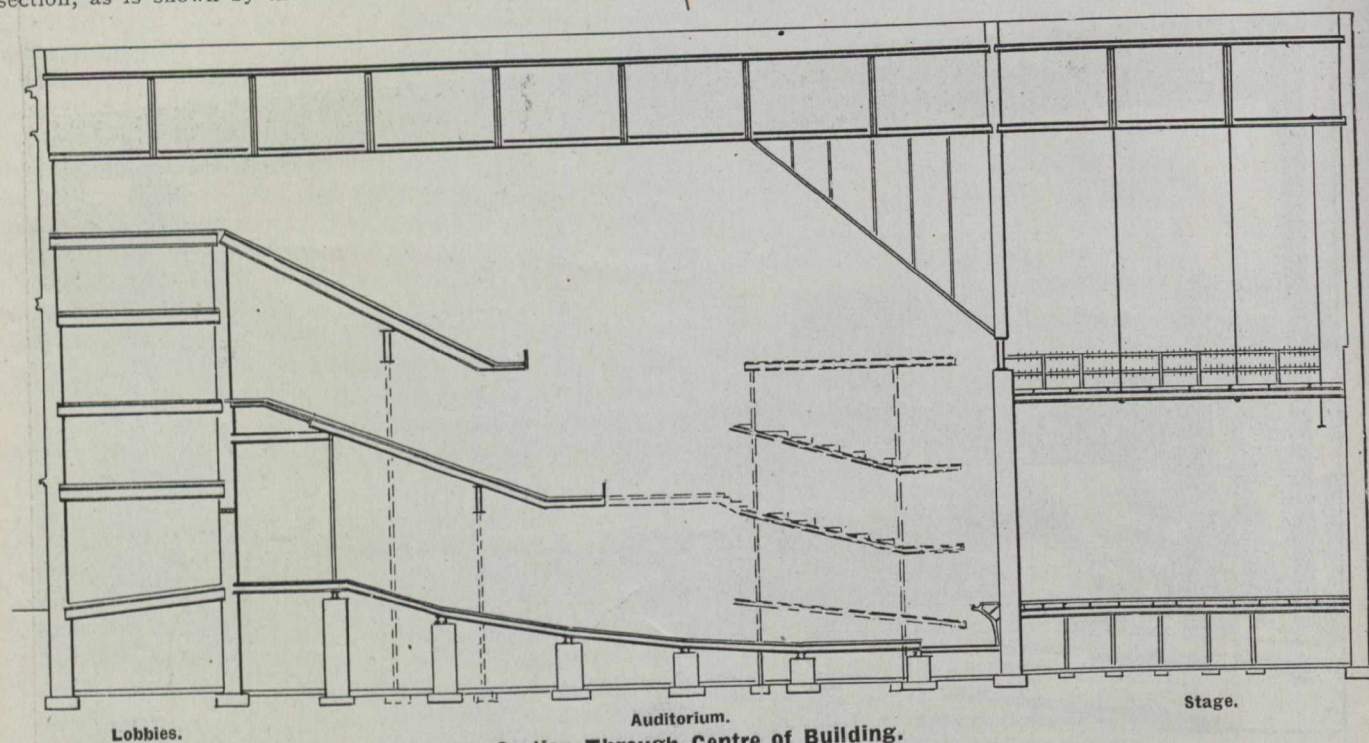


curved wall, is a row of columns, and the foremost 6 feet of the balcony is level and of light construction. Between this, spaced radially at about 7 foot centres, are the beams, supported almost entirely by the balcony girder, at a point so near their centre that there is a cantilever effect. The head-room being very limited, it was necessary to limit the depths of the beams to 15 inch, and to carry their weights as high as 80 pds. per lineal foot. Each beam rests on the girder at a different angle, and the intersection of the cone of the balcony with the plane of the girder is a hyperbola. These bevels are taken up by irregular cast-iron shoes, some forty in all being required, averaging about three hundred pounds in weight and no two being made from the same pattern. With the exception of a small portion to the rear the entire balcony is carried by the girder. The girder is limited in depth to four feet, and must accordingly be of very heavy section, as is shown by the sketch.

Twenty-six feet up are the fly-galleries, each some 12 feet wide and 42 feet long. Their slab is supported by 8-inch I's resting on the wall at their rear, and on 10-inch I's at their front, the span of which is divided into thirds by 2-inch rods hung from the stage trusses above, some 33 feet higher up. The railing for these galleries is somewhat peculiar, being designed to take the belaying pins for all the stage ropes. It is made of two 5-inch pipes, several feet apart, drilled with large holes, and being made so as to be capable of taking a great tensile stress. Between the two galleries is the paint bridge for painting the scenery. It is designed as two halves, each of some 30 feet span, the centre point being hung by a $1\frac{1}{2}$ in. bar to the truss above.

Proscenium Wall.—The stage opening in this is 42 feet wide by 34 feet high. It is spanned by a girder 4 feet deep of similar section to those in the balcony and gallery. This is supported by piers in the walls 36 inches thick. Above it,



Gallery.—The construction of this is much similar to that of the balcony but the pitch is steeper, $6\frac{1}{2}$ in 12. Like the balcony the front railing has a steel skeleton on which the steel lath and heavy ornamental plaster is easily carried. Owing to the fact that the curved rear wall is not carried above the gallery floor line the cantilever beams require to be anchored to the wall below; this is done by W. I. straps, reaching some ten feet down into it. Head room being now relatively less important, 20-inch I's at 65 pds. were allowed.

Boxes.—These are on three main levels, each row varying in height, and consisting of eight boxes. They are supported by small columns which are however placed so far back that no vision is obscured, the cantilever being again used. The slab of each box rests on 5-inch channels, and these on double 9-inch I's. Access is had to the boxes both by the balcony and by their own stair, which runs from the auditorium level.

Stage.—The basement is used for dressing-rooms, all partitions being of brick. The stage floor is supported by 5-inch C.I. columns, and by double 9-inch and single 7-inch beams. The floor itself is of heavy plank, only the foot-light apron being of concrete. The stage is clear except for a two-storey set of dressing-rooms set close to the south side.

in accordance with the by-law, the brick is laid as an arch, C.I. skew-backs bolted to the girder, causing it to take up the tensile stress.

Roof.—This consists of nine trusses, two in the lobby, five over the auditorium, and two over the stage. Of these nine, falsework was required for the two heaviest only, those over the stage. Some idea as to the total weight of the steel in the roof may be gained from the fact that of a total weight of steel in the building of about 1,000,000 pounds, some forty per cent. of it was in the roof trusses and purlins alone. Reference to the sketch will show the method of erection of the other trusses which worked out very economically. The lobby at the west or front of the building was fortunately some three feet wider than the auditorium. Each truss was riveted together lying on its side in this loft only twelve feet below its final level. The end hips, however, were omitted until the truss had been righted and they were then temporarily reinforced by I beams clamped to their side, as it was necessary to make use of their lateral strength during the process of sliding them in place. They were lifted to the height of the wall by a gin pole, power for it and for the compressed air plant being supplied by the usual hoist engine on the ground below. When raised to the level of the wall they were