

STAGE MECHANISM.

We had scarcely passed the stage door of Drury Lane and our credentials had been duly acknowledged by the hall-keeper, who, in spite of numerous difficulties, manages to preserve an unruffled manner to the thousand-and-one people with whom he has to deal.

"I don't think you will find much that is novel here," said Mr. Augustus Harris, as we were thanking him for his permission to witness the stage mechanism of *Beauty and the Beast*. He was standing, with his lieutenant, Mr. Collins, behind the heavy drop, while all around was a scene of most "orderly confusion." We observed in reply that what Mr. Harris knew and what the public knew regarding such matters differed slightly in extent, and that we believed we could find matter for an interesting, and to many novel, article. Whereupon we were handed over to the care of Mr. Barry, the courteous assistant stage-manager, who kindly put us in the way of obtaining all the information desired.

As it is not our object to dilate upon the satisfactory appearance of the lady artists, the humorous quips and jokes of the "Sisters two," or the admirable make-up and appropriate behaviour of the Bogie Man, we will plunge at once in *medias res*. Having, after some little time, been introduced to the gentlemen in immediate charge of the various departments, we were speedily taken over the entire portion of the building devoted to the stage and its accessories.

By way of commencement, we may observe that the stage part, divided from the other portion of the house or auditorium, by the proscenium wall, consists in reality of five stories, or floors, of which, naturally, but one is visible to the playgoing public. These are the cellar, the mezzanine stage, the stage proper, the first flat, and the gridiron, above which last rises the lantern or roof. The practicable width is 70 ft., while the depth to the first set scene in the pantomime now running is 42 ft. Behind this is a further available space of 38 ft., making 80 ft. in all from the footlights. If necessary, additional depth could be given, but is never practically needed. The eye of a casual visitor who passes the stage entrance is caught by the water-pressure gauges, which indicate the exact "head" of water in case of fire. Numerous hydrants are placed in various portions of the building, with hose, &c., ready for instant use, under the superintendence of trained firemen. Nothing, in fact, has been left undone to secure safety in this respect.

The first sensation of standing in the wings, or *coulisses*, of the largest British theatre is one of astonishment at the roomy space between the wings and the outer wall—necessary, however, when spectacles are provided which call for the services of 800 to 900 actors and supernumeraries. The floor of the stage itself is one vast parterre of traps and sliders, water, gas, and electric connection plugs. The traps are rectangular or star shaped, the latter having triangular flaps all meeting in one common centre. It is through these latter that demons and fairies make the rapid appearances so bewildering to the juveniles of the audience. Looking upwards to the first flat which occupies the position of an ordinary ceiling, the eye sees nothing but suspended cloths which form the background of the various scenes in this and other plays. They lie so closely together that they shut off from view the timber and cordage forming the distinctive features of the gridiron. As we gazed around and upwards, scene shifters were pressing forward with slips, while in the background a party of carpenters were fitting up the weighty and handsome balcony with the well-executed figures which adorn the grand staircase of the palace scene. As all these have to be removed and replaced for each performance, the work of dealing with such substantial adornments of the stage is no light one.

"How many carpenters and shifters have you in actual work on each performance?" we asked of Mr. Farrell, the principal mechanist and stage carpenter, who was obligingly pointing out various matters of interest.

"Ninety men, all told," was the reply. It seemed a large number, but we could well believe they were needed. As the slips, which are of

greater depth than is customary in most theatres, were being put in place, we noticed that they had no grooves or other support at the upper end.

"No," said our conductor. "We only use steady-irons." These are stout bars extending from 7ft. or 8ft. up the slip to the floor at an angle of some 45deg.

"Perhaps I had better take you to the cellar first," said Mr. Farrell; so down we went. It was, of course, well lighted by gas jets, but was a bewildering chaos of pulleys, wooden levers and ropes. In a few minutes, however, it all looked clear enough. The bottoms of some of the frames used in the transformation scene projected into the cellar, while here and there the heavy counterweights, either of the frames or trap shoots, could be seen above, ready to descend into the depths below when set in action. The slider and frame pulleys, which looked like huge sprocket-wheels, owed their appearance to an ingenious idea of Mr. Farrell's. It was found that the ropes had a tendency to "run off," so he nailed slats around their peripheries at intervals, which both prevented this danger and became useful leverages in working the wheels. We may here remark that Mr. Farrell's quarter century of experience as stage mechanist peculiarly qualifies him as the chief authority on such matters in the country. Probably we were standing upon the actual foundations of the old Drury Theatre before the fire which consumed it obliged the erection of the present building early in this century.

Returning upwards, we reached the mezzanine stage, or flooring under the true stage, whence most of the effects in the way of diabolical appearances and disappearances are worked. We noted, by the way, that a good many of the subordinate employes call it the "mazarine," but they were quite well understood. Here waiting the prompter's word of command were the living skeletons, who form a feature in the witches scene. Standing in the little trap with its two counterweights of 75lb. each, they awaited the word which put four men at each corner rope into vigorous action, with the result that they were shot through the star traps some feet into the air upon the stage. The contrivance looks just a little risky, and our conductor owned that accidents had once or twice happened at long intervals. It was obvious that if the propelling force was insufficient, the ghost, or fairy, or bogie man ran a good chance of sticking uncomfortably between the sharp points of the triangular flaps, and such an event had occurred, though not in recent years. The vampire or dive traps were another feature of the floor, working, of course, the reverse way to the star traps. The working of the sliders or narrow traps extending across the stage to permit the passage of "frames" carrying scenery or actors upwards or downwards struck one as a most perfect device. The wood which fills these spaces when in ordinary use is like parquetry work—i.e., in numerous narrow slips mounted on fillets of wood and at right angles to the cross section of the stage. By an eccentric lever the outer ends at either side are lowered, and the strips are then drawn over pulleys from the centre, opening the necessary gap in the stage. The principal frame for the transformation scene was in place as we inspected the mezzanine stage, and conveniently close by were the irons to which the actresses who formed so attractive a feature of that portion of the pageant were strapped. There was no child's play about these. Curved in various ways, with supports for the feet, waist, and shoulders of the fair occupants, who were secured to them by strong leather belts, they would stand the strain of two men's weight each, and fitted into sockets some 2ft. in depth. As we tested some of them personally, we can aver that so far as human foresight goes, the irons were as safe as it was possible to make them.

Leaving the mezzanine, we again ascended to the stage proper, and following our conductor next found ourselves upon the first flat, which as already explained, answers to the ceiling of an ordinary room or hall. It was here that we found not only some 12 of 15 men ready for working the scenes, but the lime-light and

gas men. The limelights are, as they have been for many years, supplied by the oxy-hydrogen apparatus. It was interesting to note the changes of colour and their effects upon the richly apparelled occupants of the stage. The angles of the lights require never-ceasing attention, as much of the splendour of the spectacle depends upon the care taken to keep the limelight as steady as possible. As regards the gas, every possible care is taken to ensure safety, and the whole row on each batten is duplicated by electric lamps. It was here that one first realized the enormous amount of rope and cordage necessary to work the scenes. Multiply the number of ropes leading to the main bits of an old-time line of battleship by five and you get a slight idea of the result visible on the first flat. Nothing but pulleys and ropes everywhere, turn where you will! That nothing goes wrong amid such a chaos of cordage argues a state of discipline not to be treated lightly.

Ascending yet higher by unpleasantly steep ladders, we at length reach the gridiron, a mass of timbers whose function appears to be solely and simply that of providing leads for the some 200 different ropes, which come up here from below. Mr. Farrell explains how in order to bring up a deep scene into a space of half its actual depth, additional batten ropes are needed, and furthermore demonstrates the necessity of a couple of men being always at hand to clear the cloths as they are run up owing to the minute amount of space available for each. From the gridiron to the stage is a pitch of 56ft. The cloths, as the scenes are called, are each 42 ft. wide and 36ft. deep.

Here on high were two members of the electrical staff, whose chief business was to see that the connections of the immense electrolier which forms so striking a portion of the palace scene, were all in order. To describe this curious utilization of science in the cause of Thespis we must now return to the stage itself.

Various attendants in pairs are seen hurrying in with long and curved pieces of furniture which turn out to be arms of the giant chandelier. Hastily, yet most carefully, they are fitted together, while a heavy rope support is lowered from the gridiron. In a few minutes all is ready, and in a moment the whole bursts into electric flame. Everything being found in order, the word is given to hoist away, and presently the centre of the stage is illumined by what is probably the largest electrolier in the world. Even the scene shifters, indifferent to most stage effects, give a hum of admiration as its brilliancy bursts upon our sight. And this reminds us that we have yet to see the electric department of the theatre.

We found Mr. Horgan, the superintendent of electric lighting, most willing to give us all information, and he proved to be that most useful aid to all undertakings in which public opinion has to be reckoned with—an enthusiast in his profession. He is an old military man, having been a serjeant-major in the Royal Engineers before he went in for electric matters, and thoroughly understands his work. He is assisted by Mr. Crawshaw who put in the first electric light used in the building. Under his guidance we first of all visited the converter or transformer house. Unlike many of the smaller theatres, Drury Lane does not provide its own dynamo, but obtains its current from the mains of the Metropolitan Electric Supply Company, Limited. The current is received at a voltage of 1,000, and is transformed into a current of 100 or 50 volts, as may be desired, by 50 transformers, 40 of which are placed in one small building and 10 in another. This is, of course, virtually transforming the current from high to low tension, the average voltage as sent from the transformers being 98 to 50, lighting lamps of from 16 to 100-candle power. The ammeter shows a range of from 35 to 100 amperes. When the large chandelier above described is lit, it is necessary to switch off the two front electrically-lit battens to allow its lamps to get sufficient current. The mains, by the way, run through Catherine-street, whence connection is made to the theatre, where four Shallenberger's meters register the consumption of current just as

gas-meters perform that function in ordinary houses. We need not say that the transformer house, as also the interior of the theatre, is fully furnished with effective cut-outs for each system of lamps.

Inquiring how many lamps were lit by the current, Mr. Horgan gave us some rather curious figures, which, tabulated, read as follows:—

8 battens	16-candle power of 70 lamps each.
4 battens	16-candle power of 40 " "
2 battens proscenium	70 " "
Footlights	90 lamps.
Box fronts	2 tiers of 15 lamps of 50-candle power.
Side lights on stage	12 lights of 14 lamps each.
Corridors	32 lights of 32-candle power each.
Front salon	4 " 100 " "
Rotunda	8 " 50 " "
Staircases	6 " 100 " "
Vestibule	4 " 100 " "

While upon the heads of the figures in the Palace Scene were 120 8-candle power lamps.

It will thus be seen that the installation is almost without a rival in the theatrical world. As regards the general aspect of the stage, it is about as far removed from laxity of any sort as it is possible to conceive. Nobody has a spare moment, and none of the ladies of the ballet or other scenes remain on it for a single instant when their work is done. The wonderful drill and organisation everywhere apparent renders one sensible of the service which the able administrator of a first-class theatre renders to the public at large. It readily appreciates—rightly enough—the efforts made by actors and actresses to amuse them; but it often fails to reflect how much it owes to scientists and skilled artisans for the charming effects which make spectacular dramas or pantomimes a success. We shall be glad if our sketch of the less-known agencies in achieving this desirable consummation adds to a more just appreciation of the skill and talent required, beyond the actor's art, to put a successful spectacle upon the stage.

There is one other matter upon which we may legitimately touch in an article of this description, as bearing upon the matter of safety from fire, which is perhaps one too often present to the theatregoer's mind. As regards the stage and its adjuncts, there are six exits from the stage direct to the surrounding streets and yard. From the stalls there are three, besides the three entrances in Catherine-street. The grand circle has six, the first circle five, the balcony two, the pit three, the gallery two, and the upper gallery two. As regards the stage and main portions of the house, the exit accommodation is ample, and even as regards the pit and galleries it is fairly good. Could the latter be increased, Drury Lane Theatre would stand at the head of all similar buildings in England, as affording the best means of exit existing.—*Invention*.