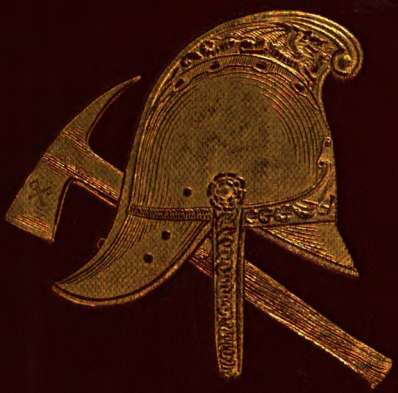
FIRES IN THEATRES



FIRES IN THEATRES.

BY

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LONDON FIRE BRIGADE.

SECOND EDITION.

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PREFACE TO SECOND EDITION.

WHEN I first became officially connected with the safety of life and property from fire in the year 1860, the point most frequently and urgently forced on my observation was, the extreme danger of many buildings in which large numbers of persons were congregated together, including schools, churches, and theatres, and by degrees it became impressed on me that of all buildings theatres were the most dangerous, and that it was the duty of some one to point out the facts.

It next occurred to me that a notification of the real state of things might increase the danger; and, being young and naturally diffident, I hesitated to take any steps which might be interpreted as an intrusion on those responsible for the safety of life in theatres. But, as years went by, and no improvement was apparent—on the contrary, everything remained as it was, or became worse—and yet statements were periodically made, wholly contrary to my views, and, as it seemed to me, inconsistent with reason and common sense, I began to realise that it was absolutely necessary for some one to speak out, and I looked about in

order to ascertain who the person was, on whom this unpleasant duty should devolve.

No more unsatisfactory inquiry can ever have fallen to the lot of any man. It was found that in some cases Corporations were responsible, in some cases Boards of Magistrates, in others, public functionaries of some kind or other; but none of these had themselves any practical knowledge, or employed any professional adviser with whom I could enter into communication with the smallest hope of a satisfactory result.

In short, all the authorities professed to do the work themselves, and appeared to pay no deference to the opinion of their so-called advisers, although it was in most cases more or less obvious that these despised and slighted persons were, in their way, perfectly competent. And there can be but little doubt that, if they had been allowed a free hand, and encouraged to bring forward their own ideas, fortified and corroborated by those of the police and firemen of their several localities, many of the monstrosities in the way of theatres, which have disgraced our cities for years, would never have been permitted to exist.

But still the question remained as to who should speak out, and tell the obvious truth, already half known to thousands of play-goers, and to nearly all actually engaged in theatres—from the managers and actors to the stage carpenters and attendants;

and it seemed impossible to find any one with the necessary courage and knowledge and position for the task.

In the meanwhile the danger continued, and in many cases increased, and I began to feel that if those whose duty it was to act, continued to remain idle, a frightful catastrophe would one day occur, and I determined to make an effort to move them.

Accordingly, in the year 1876, I brought out the first edition of this small pamphlet, which caused a certain amount of consternation, and set those interested to thinking on the subject in a new light. Before that time, it was too much the custom to believe that dangers were inseparable from theatres, and that it was best to close one's eyes to them. My idea was to point out distinctly all the dangers, and, at the same time, all the remedies; and those who read the book can judge for themselves whether this idea was carried out successfully or not.

It was an open secret at the time that a few public functionaries and several owners of theatres, licensed and belauded by those functionaries, were grievously offended, and went so far as to question the judiciousness of writing on such a subject at all. But this point had been raised, and to a certain extent disposed of, in the preface to the pamphlet; and, after the lapse of so many years, it may now again be plainly stated that the time appeared to me to have arrived when it became necessary to

convey to the public at least a fireman's views on the subject.

There is no need at present to revive this controversy in any way; but it will probably be of interest to those concerned to hear of the principal events which have since occurred in connection with the safety or danger of theatres, and to compare them with the pronouncements then made, in order to ascertain how we stand now, and whether the existing generation is likely to profit by the experience and increased knowledge acquired during these latter years.

The history of these years shows most conclusively that simplicity of exits should be more than ever insisted on; and it is not too much to say that a fearful responsibility rests on those who permit large numbers of persons to meet face to face, or even at any wide angles in the passages, or on the staircases of theatres, when leaving the building.

The practicability of illuminating theatres by means of electricity has been so distinctly proved, that it would seem to be a duty of licensing authorities to make electric-lighting compulsory, unless some safer and equally effective means can be substituted for it.

That something has been accomplished there can be no doubt, and this may justify a hope for the future; but in a matter of such urgent and

paramount importance, spasmodic action, characterised by want of knowledge, absence of system, and not unfrequently by caprice, can seldom produce permanently beneficial results.

It may seem strange that for one of the most vigorous proceedings of late years in connection with safety of life in theatres, we should have to turn to Spain; but such is the case. On the 31st of March, 1888, the "Madrid Gazette" published a royal order to the following effect.

Article 1.—The establishment of electric-lighting shall be obligatory for all the theatres of this capital. The use of gas, which is at present employed, is absolutely forbidden.

Article 2.—A period of six months from this date is allowed for establishing the electric light in all the theatres now open in Madrid. The period in question shall be employed as follows: During the first two months the licence must be applied for, and this, if approved, must be granted before the expiration of the third month; the remaining time is to be employed in carrying out the necessary operations.

Article 3.—The application for a licence shall be addressed to the Mayor of Madrid, who, after causing the necessary inquiries to be made by experts, shall transmit the licence to the Civil Governor, who will submit it to the Consultative Committee of Theatres, and, on receiving their

report, will return the licence to the Mayor, who shall refuse or grant it according as the Civil Governor may direct. Every application for a licence shall be accompanied in duplicate by—

A. Complete plans and drawings of the theatre and the adjoining houses on a large scale indicated.

B. A written description, signed by an architect and a civil engineer.

C. A specimen, at least one mètre long, of the cable or wire proposed to be used.

Article 4.—The person interested shall not commence operations until provided with the necessary licence, which must be granted before the expiration of the third month after the issue of the Royal Order.

Article 5.—When the works are completed, the experts who have superintended them shall certify that all the conditions required by the licence have been fulfilled, and these certificates shall be laid before the Civil Governor, who will submit them to the Consultative Committee of Theatres, and, if all is satisfactory, a licence will be granted.

There are other Articles which, though in a manner important, need not be quoted at length. They refer chiefly to the steam generators and other mechanical appliances being placed in isolated and independent situations, and never in places accessible to the public or the artists; to gas motors being

fixed in safe, well-ventilated vaults quite external to the building; to compressed-air motors being placed in vaults or covered courts, with all necessary precautions against danger to the theatre in the event of an explosion; to stores of fuel being deposited in safe places, and many other matters of a similar kind. Then comes a rule that incandescent lights are to be used inside the building, and voltaic arc lights on the outside only, except under certain circumstances for the stage, and then by special permission. The mechanics employed on the stage are prohibited from using candles, but are allowed to have lamps with strong glass, such as are used by miners; any breach of this regulation is punishable by a fine varying from 10 to 50 pesetas (from 8 to 40 shillings). Lamps burning olive oil shall be placed in number sufficient to light up the foyer, staircases, corridors, vestibules, and offices, and in such a manner that the exits may be distinguished with perfect ease. The lamps shall have glass globes, white and red, to mark the several points at which the theatre may be quitted; they are to be lighted before the entrance of the public and extinguished after their departure, and the Civil Governor is to determine the number of lamps to be employed.

It is most satisfactory to be assured, as I am, on the highest possible authority, that this decree has been carried out without a single difficulty, that

every theatre in Madrid is now lighted by electricity, and that the enactments are about to be extended to every city of Spain.

These regulations are eminently practical, and there is not among them all as much as one which can be considered unnecessary or unreasonable; but it may be gravely doubted whether any governing authority in this country would have the strength or courage to issue a similar decree, although several private individuals have for their own personal reasons established electric light in theatres with a success which appears to leave nothing to be desired.

But, after every allowance is made for unavoidable errors or inaccuracies, it will probably be found that sufficient information is here given to impress on public authorities the importance of the subject, and the desirability of placing on their own skilled advisers, whether architects, surveyors or others, the responsibility of inspecting theatres, and presenting written reports as to their safety, before issuing licences.

There is no doubt whatever that a theatre can be made reasonably safe for an audience in the event of either panic or fire.

The following pages bring up the details of fires in theatres from the beginning of 1876 to the end of 1888, and, if carefully studied, ought to provide for those interested, the means of ascertaining,

without prejudice, and with a certain degree of accuracy, how we actually stand in such matters, and whether we have gone back, remained stationary, or progressed, during the thirteen years which have elapsed since the first edition of this pamphlet was published.

In collecting statistics of this kind from all parts of the world, there is a constant liability to error in consequence of the exaggeration apparently inseparable from the published details of fires and panics; but every possible effort has been made to eliminate doubtful or uncorroborated statements, and many graphic and circumstantial accounts have been struck out altogether, owing to the exaggerated or contradictory language in which they have been conveyed, especially by foreign narrators.

The number of theatres actually destroyed is probably about ten per cent. more than I have mentioned, and the number damaged, in which category I have also placed a few panics, is quite double that here given.

The number of persons given as killed, 2,215, is well under the mark; as, for want of corroborative evidence, I have in several years omitted a great many, and, in one year, have struck out all; and the number I have mentioned as wounded, 748, bears a very small proportion to that of persons actually injured.

PREFACE TO FIRST EDITION.

THE subject of preventing the sudden destruction of theatres by fire is one which must necessarily force itself on the attention of all who inhabit crowded cities, and especially of those intrusted with the protection of helpless masses of persons on the occasion of such catastrophes; but the expediency of directing public attention to it may possibly be called into question, and on this point it may be well to say a short preliminary word.

It must be acknowledged that there are many people in the world who would rather not be made acquainted with the dangers that surround them, and whose natural nervousness is such, that a warning against danger may sometimes have as serious an effect on them as the danger itself; and, if there is one class of men which, more than any other, has a constant opportunity of observing this kind of feeling, it probably is a fireman. If, therefore, no good were likely to result from giving a warning about theatres, it might be as well, at least for me, to refrain from doing so; but on the other hand it is to be said, that, if a fireman is silent, and no one else knows how to speak,

or no one considers it his business to speak, or perhaps no one cares or dares to speak, a sense of insecurity, which may be often latent but is never altogether absent, may go on continually increasing until, at any moment, it may take the shape of panic, and cause disastrous consequences.

This point was carefully and anxiously considered before I ventured to publish the following remarks in the "Practical Magazine" a short time since; but the spirit in which my papers were received and commented on has, I think, fully justified the course which, with great diffidence and not without a strong sense of responsibility, I felt it to be my duty to take.

The feeling of nervousness caused by a knowledge of risk is one wholly senseless and worthless: it can never by any possibility do good, and may do harm; but it exists, and has to be acknowledged, as it is here, and allowance must be made for it. This is all very well in its way; but if a serious accident were to happen, and a man professing to have special knowledge were to come forward afterwards, and say he could have pointed out means by which it would have been averted, and that he was prevented doing so by his fear of causing excitement in the minds of nervous persons, how would the world judge such a man? How would he judge himself?

I have carefully and laboriously studied the

subject of protecting theatres from sudden destruction by fire; I think I know every source of danger that exists or can exist in such places, and I am strongly convinced that with proper construction, judicious management, and sound precautions, there would be no danger for the audience, and very little for the building, and this is my reason for writing on the subject.

I am quite aware that it is not my special business to interfere in such a matter as this, but I am not aware, nor do I believe that any one else is aware, whose business it is, or whether it is the business of any one; and, in this state of utter vagueness and ignorance, I think it better to say what I have to say, and to send it forth for what it is worth, than to withhold it now and have to state it afterwards, perhaps on the occasion of some great catastrophe.

I have never met a manager in this or any other country in which it has been my fate to travel, who did not impress me with a sense of his anxiety to do everything in his power for the safety of his audience, and I know of many efforts in this direction, and much expense incurred in making them; but I can recall to mind very few instances in which the arrangements have been really methodical or satisfactory, and our own country presents a humiliating example of the entire absence of any system or method whatever.

I trust that the recommendations and suggestions in the following pages may receive the attention which they appear to me to deserve, and I desire to repeat, in this case, what I have never lost an opportunity of stating for many years in connection with my business as a fireman, namely, my sincere conviction that it is cowardice and folly to shut our eyes to that which is uncertain or unsafe in such a matter as that now under consideration, and that true courage and prudence consist in acknowledging the existence of a great and serious danger, and taking just and reasonable measures to guard against it.

Index to Manufacturers

OF

APPARATUS AND APPLIANCES

FOR

PROTECTION AGAINST FIRE.

FIRES IN THEATRES.

THE singular immunity from loss of life which has of late years attended the destruction by fire of theatres and other places in which large numbers of people are congregated together should not be allowed to blind the judgment of thoughtful minds to the extreme probability, if not absolute certainty, that under different circumstances many persons might have perished.

The object of these pages is to indicate the principal points of safety and danger in such places, and to awaken general attention and interest to a subject of more or less personal concern to nearly all who live in civilized communities at some period or other of their lives.

In this country it is a good deal the custom to preach against what is called "panic legislation," and no doubt there is much to be said against it; but, at the same time, those who take a professional interest in matters involving expense in connection with the protection of life know well, that the only chance of any legislation at all in this direction is when the public mind has been startled by a catas-

trophe, and that, consequently, it is their duty to prepare for this beforehand by offering such sound advice as their experience can dictate, and giving it as much publicity as possible, being confident, that although in the hour of safety it may subject them to severe criticism, possibly to the charge of creating the very panic which they desire to avert, nevertheless, when a serious disaster happens, it will be considered reasonable and moderate; and, judging from analogous cases, it may be assumed that after a great catastrophe restrictions and regulations of a much more rigorous kind than any here recommended would be imposed without the smallest hesitation.

The general subject must, in the first instance, be divided into several distinct and separate branches, including the external approaches, the surroundings, the building, the inlets, the internal structural arrangements, the internal police arrangements, and the means of egress, whether these latter do or do not serve also as part or the whole of the inlets.

It is unnecessary to go into any more minute details than those here given concerning points which are common to buildings of all kinds, such as, for instance, approaches, structure, &c., &c., especially as any further information which may be required on these branches of the subject can be obtained in my book on "Fire Surveys."

It may be that in the view of those considering the subject for the first time it may seem to be out of place for a fireman to point out matters connected with police duty; but such a view would be most erroneous, and could only be held by those who suppose police duty to be nothing more than the mere waiting and watching and patrolling which constitute the principal duties of a street constable. To those who think of it in the larger sense, as including all matters connected with the safety of life and property, it will probably appear that the packing of large numbers of persons within circumscribed limits, whether for religion, instruction, politics, amusement, or any other purpose, is a subject which should properly occupy the attention of those in authority as a part of police duty in its real and comprehensive sense, including the arrangement, management, and protection of the inhabitants of a city or state. In the particular matter now under consideration there ought to be a perfect co-operation of all those engaged in police duties proper as above described, whether they be sworn constables of police, firemen, managers, door-keepers, attendants, or others, who have anything to do with the admission, arrangement, or departure of visitors.

The external street approaches should invariably be kept free and unobstructed, as they may at any moment be required for a rush of the audience, and

such of the inlets as also form the exits should be not less numerous than the internal divisions of the auditorium, according to prices.

Each inlet should be easy of entrance at its outside point, well lighted, free from small projections or obstructions likely to cause injury, quite free from steps at any point where a crush is likely to take place, and gradually narrowing to the width of the narrowest internal passages through which the visitors have to reach their seats. In long straight passages, where the pressure of a crowd might be likely to accumulate so as to become dangerous, perfect safety can be obtained by placing at intervals strong barriers running from alternate sides, and so arranged that not more than fifty or some such limited number of persons could press on each other at a time. Obstructions of this kind carefully placed will be found not to delay the entrance of visitors, but on the contrary to facilitate it by removing all necessity for crushing, and so allowing them to walk quickly to their seats instead of being pushed and hustled as is too commonly the case.

As to the surroundings, it is to be observed that the safety of a building is very seriously affected by its position with regard to those near it. On this account a theatre or any building in which large numbers of persons assemble should under no circumstances be completely surrounded by

other buildings. The practice of entering and leaving such a place by a passage or set of passages through other buildings, and not direct from the street, is one so obviously dangerous in the extreme, that it must be a subject of wonder how it can ever have been permitted in any country making even the pretence of superintending the care of its inhabitants.

If a theatre be surrounded on several sides by other buildings, it should have no windows or other openings in the direction of those buildings, and care should be taken that it should be so constructed that it would be impossible for it to be affected by anything happening in them. The practice, for instance, of allowing the roof of a building to lean against a theatre wall with openings in it above the point of contact is one wholly inconsistent with the safety of the visitors of the theatre. No rule can be laid down as to the distance to be allowed in towns, as so much depends on the nature and contents of the adjoining buildings, and the purposes for which they are used, but in any special case it requires but a very small exercise of intelligence to ascertain instantly by personal observation whether fire could be communicated or not.

In one country abroad, thirteen feet is the minimum distance allowed between the walls of a theatre and those of the nearest buildings, and

it is specially laid down that the intermediate space must be open.

Shops round theatres and forming part of the same block of buildings are always more or less objectionable, and even under the most favourable circumstances should on no account be permitted, unless the contents are safe from explosion, and the walls, ceilings, and roofs able to resist any fire which could happen in them. This can be done without the smallest difficulty, and consequently there can be no excuse for omitting to do it.

To sum up this part of the subject, it may be said that a theatre would be most safe if standing alone, that every house in its immediate vicinity adds to its danger, and that its risk is greatest when it is entirely surrounded by houses.

This, of course, has no reference to houses built under the same roof, or in the immediate vicinity, for the special purpose of providing suitable and sufficient means of entrance and exit for the audience.

The external walls of a theatre should be strong, solid, well bonded both in themselves and to each other, and able to resist very considerable shocks. They should also be supported on the inside by all internal walls which touch them. Numerous instances have shown that it is a great mistake to have a number of internal walls merely touching the external walls, and not bonded into them nor

in any way contributing to the support of the structure.

In fact, structural weakness in any part of a theatre which has to contain a large number of the audience, whether moving or stationary, is dangerous in the extreme, and should be guarded against by all possible means.

There are certain internal divisions in a theatre which are necessary for the transaction of business, as, for instance, the manager's rooms and offices, the dressing-rooms of the actors, the store-rooms, the stage, the auditorium, the passages and galleries of the auditorium, the corridors, refreshment-rooms, staircases, entrance-halls, &c., &c. ; and all these should be constructed of solid heat-proof materials, and should form an essential part of the building, instead of being, as sometimes happens, a mere collection of apparently temporary fittings just able to carry themselves and the persons ordinarily likely to pass over them, and of no service to the general structure, but, on the contrary, a source of danger to it on account of their great inflammability.

Some of the internal walls are necessarily placed at points at which it would be most desirable to separate the risks of the several parts; as, for instance, between the sides of the auditorium and the wings of the stage, and again, between the auditorium and the corridors between the corridors

and the stairs, and so forth, and the more solid and complete the walls are at these points the safer the building will be. In a theatre there are some parts which cannot be divided, as, for instance, the stage, and again the auditorium; and this it is which makes the danger of such places inseparable from their very existence; but there is no corresponding reason applicable to the whole structure. On the contrary, there are many why it is desirable in the interests of true economy, and especially for the safety of life, to divide the whole building into as many distinct and separate risks as possible, of course without at all interfering with the business to be carried on. For this purpose the first and most obvious point is that at which the curtain falls, as the opening at that spot is much reduced by the partial cross walls and the supporting wall under the front of the stage. In short, at this point the whole house should be divided into two distinct parts by means of a firewall commencing in the basement and going through the roof and to a height of from 4 to 6 feet outside. This wall should be perforated at the sides on each landing, and at the bottom under the stage near the orchestra, and fitted at the perforations with wrought-iron doors; and it should, of course, have the usual large opening to the stage, but with these exceptions it should be complete; and at the great opening an effectual protection could be obtained by means of a metal

curtain which could be dropped at a moment's notice. The metal curtain should be supported and worked by steel or iron chains. Such curtains, it is true, have before now been tried and have not found favour with managers of theatres, but that does not at all affect the subject under consideration. They may have been badly made, badly fitted, or badly worked ; but, even so, it must be obvious that, in the event of a fire happening, they would have done *some* good.

At all events, in the present condition of mechanical skill and knowledge it is simply monstrous to say that the thing is impossible, and it is quite certain that there are thousands of the first engineers of this and other countries who would not hesitate to accept an order for such a curtain, and, if not hampered by restrictions, would guarantee that fire would not get through or by it under any circumstances whatever in less than an hour or so, which is much more time than would be required for saving first the audience, and afterwards the auditorium and other parts of the building. In all the other parts of a theatre separations can be effected by means of iron doors, and in places where iron doors cannot be fitted, wooden doors will be found better than none at all. The great object to be attained is the division of the whole building into the greatest possible number of distinct and separate risks, and the subdivision again of

these into risks either wholly or partially separate, and the safety or danger of a theatre is precisely in proportion to the extent of this division and subdivision.

It is a grave reproach to our age to have to acknowledge, as we must do now, that the lives of many hundreds, in some cases several thousands of persons, may be at any moment placed in the utmost jeopardy through the carelessness or over-zeal of a scene-shifter or some subordinate assistant, who, however intelligent and well-intentioned, is always liable in the transaction of his business to cause the very kind of accident which may result in the destruction of the building.

If this sort of danger were necessary, that is to say, if it were inseparable from attendance at a theatre, people would still go, as they go into the hunting field, or on the sea, or, as sometimes happens, even into battle, for amusement; but they would do so with their eyes open, and would be prepared to take the consequences, balancing the pleasure against the risk, and for such people it may perhaps be well to allow the present arrangement of theatres to remain unquestioned.

There are, however, others who prefer, when convenient and practicable, to separate their amusements from their dangers, and again the thoughtless thousands who have to take their amusements where and when they can, and who

have neither time nor knowledge to estimate the dangers, and for the good of all such it would seem to be a duty either to remove the dangers altogether or to give ample warning of such as exist.

It may be difficult to remove the dangers altogether in the strictest sense of the words, making every portion of the inside of a theatre heat-proof, uninflammable, and incombustible; but to remove the dangers as far as they concern the audience absolutely, and the several parts of the building partially, is not only not impossible, but, moreover, not even difficult. It would of course involve an outlay of capital; that is acknowledged; but it would not interfere with any one of the objects for which theatres exist; on the contrary, it would facilitate many of them, and there is much probability that the extra outlay of capital would be repaid by a saving in current expenses.

A theatre should in the first place be divided into two principal parts, one before, the other behind the curtain. After this there should be the several great divisions of—in front—the auditorium, refreshment-rooms, and places for exit and entrance; and—behind—the stage, the dressing-rooms, the workshops, and the store-rooms.

Then there are the subdivisions.

The auditorium proper cannot cannot itself be subdivided, but the audience can be, and each

portion ought to have a separate place for entrance and exit according to price, so that, in case of an alarm or of anything happening which would require a sudden clearing of any part, there would be no obstruction at the immediate point of exit from the seats. It would be desirable that each portion of the audience should leave the building altogether by different passages, stairs, and doors, but this is not absolutely necessary for safety. If the several portions can leave their seats without obstruction, they may without much danger be allowed to join at some little distance, but in this case they should not be allowed to meet in a common passage either end on, or, if it can be avoided, even at right angles. It is much safer for the two streams to take the general direction of the common passage before they enter it. Then, as to trifling differences of level, it will be found that gradients not exceeding one in ten are perfectly safe for a crowd, and that even the smallest steps are more or less unsafe. When there is a gradient, however, it is most desirable to avoid any pressure near it, as persons after entering a gradient downwards involuntarily attain an increased speed, and, if this be further accelerated by a pressure from behind, accidents may happen.

This danger, however, is very easily guarded against either by having the entrance to the gradient at a wide angle from the communicating

passages, or by a simple arrangement of barriers at alternate sides reducing the number of persons in each compartment, so to speak, to about fifty or thereabouts, as this number cannot create a sufficient pressure to do injury.

In inclosed passages and staircases, hand-rails at a distance of about three inches from the walls on both sides are always an advantage. It is true that they occupy some space, and this is against them; but, on the other hand, they almost invariably prevent persons falling down and being trodden on. When a crush comes, the persons at the sides hold on to the rail, and those in the middle hold on to them; and it is most unusual with such an arrangement for any one to be thrown down and trampled on, whereas in passages without a rail there is nothing to prevent persons falling, and, when they do fall, the consequences are most serious, not only to themselves through being trampled on, but to all in the vicinity, on account of the obstruction and the increased impatience or panic which is sure to follow it.

A hand-rail has also the advantage of giving those near it something to hold on to, thus enabling them in some measure to regulate the speed, and so diminish some of the worst consequences of a rush.

Each part of a theatre should be licensed and legibly marked for the number of persons it is to

contain, in the same way as steamships, omnibuses, &c.; and it should be a misdemeanour here, as it is on the other side of the Atlantic, to occupy the aisles or passage-ways between the seats with camp-stools or chairs, to allow persons to stand in the passage-ways during the performance, or in any way to interfere with the free ingress or egress of the audience in the common aisles.

But to proceed with the subdivisions. The refreshment-rooms should be separated from the auditorium proper by a sound, strong wall of masonry, with of course the necessary number of openings for the transaction of business, fitted with strong wrought-iron doors. The lobbies, corridors, and landings should also be separated from the auditorium proper in the same way, and these should be of such a capacity that they could hold on an emergency the whole of the persons accommodated in the parts of the theatre opening on them. With such an arrangement as this, an audience would have an almost absolute certainty of safety in case of any accident on the stage, as there would be first the metal curtain, which would keep flames back for a considerable time, next the immediate exit into lobbies and passages, where they could shut the iron doors behind them, and finally the retreat into the open air, which under such circumstances could be made at leisure.

The spaces to be allowed for this purpose can be easily calculated.

A crowd can be packed in such a way that each person shall occupy only 1½ square feet; but such packing is very close, and where there is necessarily a movement would be decidedly dangerous.

Even when packed less closely and allowed to occupy 1¾ square feet, there is no safety for women and children.

A number of grown persons placed together loosely, but touching, occupy upwards of 2 square feet each, or to be precise, 21 square feet for every ten persons; but this is certainly below the allowance which should be made in the way of passages, corridors, and stairs for the kind of mixed crowd which constitutes the audience of a theatre.

As a simple rule it may be laid down that for every hundred persons in a theatre, the passages, stairs, halls, &c., with immediate access from the several parts of the auditorium, should comprise an area of not less than 250 square feet, and that, the wider the passages and doorways are, the more favourable they are for safety. Thus, while a space of 100 by 2½ feet would be sufficient, one of 50 by 5 would be preferable, and one of 25 by 10 infinitely better; but the great object is to have the space provided in any shape, and to have immediate access to it.

That the means of ingress and egress are not at present what they ought to be, is abundantly shown in many theatres by the practice of having a light piece to play the audience in and another to play them out; a practice which, as far as can be judged, seems to have arisen solely through the difficulty experienced in filling and clearing these places even when there is no panic.

Where this is not done, a large portion of the audience leave their seats before the conclusion of the performance, to avoid the inconvenience and delay of having to join the crowd in corridors and passages too small for the purpose.

In at least one country on the Continent the rule is that two exits are required to be provided for 300 persons, and three exits for 500, and the principle of making not only the size but also the number of exits bear some recognized proportion to the audience, is decidedly a good one, and might with great advantage be adopted here.

As to the subdivisions behind the curtain, it is most desirable to have passages between the dressing-rooms and the stage, and these passages should be fitted with iron doors where they open on the stage. Such passages and all the dressing-rooms should be of strong masonry, well arched over and capable of standing the shock of anything likely to fall on them in case of fire; they should also have a safe outlet either to the open air or to

some safe spot not in the risk of the stage. The stage itself cannot be subdivided, and must always be in one risk, but it can be effectually shut off from the dressing-rooms by passages, as above shown, and it should on no account be in direct communication with the workshops or the store-rooms, nor should these latter communicate directly with each other.

There are certain operations carried on within a theatre which form the especial and legitimate risk of such a building, but there are others which, though best carried on in the immediate neighbourhood, need not necessarily be done within the walls; both kinds will be considered separately, and it so happens that it is in some of the latter that the greatest danger lies.

The quick shifting of light scenery in the immediate vicinity of powerful gaslights, the intense heat caused by the lights in the upper parts over the flies and slides, the rapid manipulation of gas, oil, lime, and other lights for scenic effect, and the occasional use of explosives in the midst of a vast quantity of highly desiccated wood, a labyrinth of cordage, and a quantity of hanging drapery moving about with every draught and blast of wind—these, and some others hardly sufficiently important for special notice, as for instance, trifling carpentering repairs, or glue-pot work on a small scale, constitute legitimate risks

which may be sometimes capable of reduction, though they cannot be altogether abolished; and of them it can only be said, that they are generally well known among all engaged in a theatre, from the artists to the carpenters and other operatives, and that consequently very great caution is commonly used to prevent ignition of even the most trifling article of any kind, as they are well aware that the result would almost inevitably be the sudden blazing up of the whole.

The operations which need not necessarily be performed within the walls of a theatre are carpentering on a large scale, scenery-making, scene-painting, and decorating; and these, if carried on away from the building, are by no means specially dangerous. When, however, they are done within the walls, and subject to high temperature and desiccation as before explained, as well as to the chance of other materials suddenly blazing up near them, they increase the danger to a very serious extent. When again to these operations is added the storage of large quantities of timber, clothing, furniture, lumber, and the thousand articles known in theatres as "property," it will be seen that the danger is infinitely increased. The remedy here is, as before, a separation of the risks, first into two great divisions, the necessary and legitimate forming one, and those operations which can be carried on outside the walls the other.

Then come the subdivisions, which unfortunately cannot affect the former, at least to any appreciable extent, but which can be freely and with great advantage applied to the latter. The workshops should be effectually separated from the scene-painting, the scene-painting from the lumber-rooms, the lumber-rooms from the clothing-making department, the latter from the property-rooms, and so on.

These rooms should be floored and ceiled with well-burnt tiles laid in good cement or plaster ; or, if preferred, the floors and ceilings might consist of cement or plaster alone ; but it is essential that they should be solid, and not, as generally found, hollow, with air passages inside.

For convenience of business they might all open on a common passage if desired ; but each should be surrounded by walls of solid masonry with iron doors, which on the first alarm might be instantly closed so as to isolate them.

In such rooms or in any part of a theatre, except when absolutely necessary, there should be no light inflammable materials forming part of the structure or fixtures. Everything should be of such a kind that it would under no circumstances blaze up suddenly when ignited, and should be as heat-proof as possible. Stairs, floors, and partitions should be composed of materials both heat-proof and uninflammable. All metals for this purpose

are objectionable, unless the compartments are very small, in which case iron may be used with safety, if embedded in plaster or cement or covered in a strong casing of wood, which up to a certain point is perfectly heat-proof.

In the great divisional or fire-wall there should be on every level, from the basement to the roof, doorways as large as convenient, fitted with double iron doors, which should generally be kept closed, but could be opened from either side when necessary, and there should be direct access to these doors from the several passages and corridors in front; and, in the event of the levels not corresponding, there should be light wrought-iron ladders fixed at the stage side, so as to insure immediate transit in either direction.

For the safety of the audience a theatre should be provided with at least two principal staircases, and these should be as far as possible apart, so that in the event of one becoming injured by fire or enveloped in smoke the other might be made available. It would be much safer to have two separate staircases for each part of the audience, according to price, leading from the lobby adjoining the seats to the hall of exit, so that half of each part of the audience might pass out by itself; but, where there are two main staircases, the stairs could be divided by longitudinal partitions, which would, to a certain extent, produce the same result

by preventing undue crushing, and thus insuring rapid egress in case of necessity.

This should always be a special point for consideration where the safety of large numbers of persons has to be provided for. If one man in case of fire were to find himself alone in the top story of a theatre, he would immediately run downstairs and would almost certainly escape, and there appears at first sight no particular reason why a great many should not be able to do so as well as one. But those who have experience in such matters know well that the tendency of a crowd in such a case is to become excited, and that when excited they will push and hustle and struggle with each other, until, if it be possible to form a block, they will completely block up the way, and for a time render even their own egress impossible. It is therefore incumbent on those concerned to provide means of egress which shall be obvious to all, of sufficient size, not for an audience in their ordinary condition, but for one in a state of intense excitement, and which shall be either altogether free from obstructions, or shall have only the barriers or other obstructions necessary for general safety, and especially designed and fixed for the prevention of unnecessary crowding.

Stairs with bends at a right or even an acute angle are much safer than straight stairs. It is true that a uniform movement of persons passing down

the stairs is to a certain extent desirable, particularly in a panic; and angles in the stairs interfere with this uniformity to a certain degree, as the persons on the outside of the bends have a greater distance to travel than those on the inside; but the absence of pressure is of greater importance than uniformity of movement, and consequently, where great crowds have to pass down stairs, angles are very useful. In some buildings too it may be possible to construct the stairs with angles in alternate directions, first right and then left; and thus, to a certain extent, to combine uniformity of movement with absence of pressure.

Care should be taken to prevent an undue accumulation of heat in any one spot, particularly over the principal light of the auditorium, and no wood or other inflammable material should be permitted in the immediate vicinity of this or any other place in which the temperature is necessarily high.

It may perhaps not be known to every one that in many theatres the carpenter's shop is situated in the roof over the main gas light, an arrangement wholly incompatible with the safety of an audience in case of fire.

Where there is glass round or over lights there should be a metal grating underneath to prevent broken fragments of glass falling and injuring persons, or setting fire to the place.

All lights of every kind should be protected by hanging shades above to disperse the heat, and by cages or gratings round to prevent anything being blown on them, or coming in contact in any other way; and the footlights should, in addition to this, have a strong wire at a distance of about eighteen inches to prevent the actors coming into danger.

After the performance the lights of the auditorium should on no account be lowered until the whole of the audience has left. No excuse should be given for any one to light matches.

In every part of a theatre there should be a few oil or candle lamps kept lighted to prevent a panic in case of the gas being accidentally or otherwise extinguished.

When small repairs in painting or carpentering are unavoidable, they should invariably be done without artificial heat, and if possible without artificial light, and should be concluded at least an hour before the opening of the doors, so as to allow time for the discovery of any damage likely to arise from them. If artificial light be absolutely necessary, it should be supplied either by means of the fixed gaspipe, which should be attended during the operation by the responsible gas-man, or by means of locked safety-lamps surrounded with metallic gauze, and in charge of a fireman or other responsible official who would know what to do in the event of an accident.

All stage lights should be guarded with metal wire at such a distance that any material coming in contact with the guard would be out of reach of the flame. It is better to have nothing at all over or around the lights than to have guards placed, as is too commonly the case, in such a way that they serve to hold falling materials within reach of the flame; as, where there are no guards, there is at least the possibility that the falling materials may extinguish the light.

Care should be taken to have all the chimneys carefully swept.

Chips, shavings, fragments of wood or other inflammable rubbish should not be allowed to accumulate within a theatre, but should be removed at least once a day, and, if only once, the time should be at least an hour and not more than an hour and a half before the opening of the doors for the audience.

Every part of a theatre should be under the absolute control of a responsible official armed with the necessary authority for the work intrusted to him.

Thus, one man might have charge of the street approaches, another of the entrances and exits, corridors, stairs, and refreshment-rooms, others of the several sections of the seats, another of the dressing-rooms, others of the property-rooms, &c., &c.; and the chief carpenter or machinist should be

absolutely responsible for the safety of his department during the performance, the gasman, scene-shifters, and all other persons engaged being under his orders for this purpose.

All these officials doubtless at present exercise some such functions as those here indicated, but it is more than doubtful whether their duties and powers are sufficiently defined for responsibility to be brought home to them in the event of a catastrophe. It is almost needless to observe that, unless they are intrusted with powers sufficient to insure the execution of their orders, their alleged responsibility, like the so-called firemen often found in theatres, is nothing but a sham. The distribution and consequent frittering away of responsibility is one of the curses of our time. It is like a foul disease infecting everything it reaches, and spreading wider and wider every hour; but there is perhaps no case in which it is so fatal in its results as where the lives of many depend on the rapid action of one.

Every theatre should have in constant readiness a supply of water under a pressure capable of forcing it to every part of the building, and in quantity sufficient to last until the arrival of external aid, and there should be a rising main and distributing pipes mounted with proper hydrants or fire-cocks in such a way that no part of the building

should be at a greater distance than thirty feet from a hydrant.

A few years since an intelligent writer in this country proposed that a series of perforated pipes should be led all over the auditorium for use in case of need. The idea is an old one, but it has not, as far as I am aware, been adopted in more than a very few instances, and then only for extremely hazardous manufacturing operations. Indeed, there can be very little doubt that, with such an arrangement, a great power of destruction by water is placed in the hands of the person in charge of the command-cock, and that, as it makes but little difference to those who are only pecuniarily interested whether the loss is by fire or by water, there is generally very little encouragement to owners of property to adopt this plan. At all events, in the case referred to, the idea was publicly and privately scouted by almost every one who treated of it; and yet the fact remains, that, however dangerous to property it might be to have a series of perforated pipes distributed all over the auditorium of a theatre, such an arrangement would make the safety of an audience in case of fire absolutely and completely certain.

There should also be a sufficient stock of portable water-pipes, or, as they are more commonly called, hose, with the necessary appliances to be able to

provide two lines complete with everything from the principal entrance to the most distant parts of the building on each floor and on the roof, and the hose should be mounted with screws and other fittings of the pattern used by the public fire-brigade of the place.

There should be a few hand-pumps in pails and a large number of buckets distributed throughout the building in convenient places, and there should be on the stage, and in any spots where danger is to be specially apprehended, some buckets of water, hand-pumps, sponges, and wet blankets, for immediate use.

A fireman, or in large theatres a staff of firemen, should always be present whenever any of the audience are in the house, and there should be small bells which could be rung from various parts of the building to call the firemen in case of any anxiety, without alarming the visitors.

By the term fireman here used is to be understood a man trained and instructed in the business of extinguishing fires, and not, as too commonly is found, a mere labourer, a scene-shifter, or other subordinate assistant, clothed in a costume resembling a fireman's uniform.

The kings and queens upon the stage may be perfectly competent to reign in real life, and the generals and admirals to command; at least, no one can assert that they are not so, until after they

have been tried and failed; and by a parity of reasoning it might be inferred that the theatrically got-up fireman may have the highest qualifications for doing what would be required of him in case of need; but it must remain a serious question with those responsible for the safety of life in theatres (if any authority responsible in this way exist in our country), whether it would not be safer to have no one at all than a man merely got up in the clothes to play the part.

This is a point on which I own that I can hardly offer an unprejudiced opinion, as I have spent so much of my life in training men, and naturally believe that a sound course of theoretical and practical instruction, followed by experience gained in actual work, offers the best guarantee of favourable results in case of emergency; but in the present case I have endeavoured to lay aside my personal and professional bias for the moment, and to look on the matter from a wider point of view. It is, of course, advisable that one individual should be responsible for the condition and distribution of the fire-extinguishing appliances, and should be looked on as the leader or head, so that, in the event of a fire breaking out, there should be no conflict of authority even for a moment. Then, as a matter of course, it follows that the leader should have a distinguishing costume by which he could be recognized, and so let the question of uniform be

conceded. But here the concessions must end, for, taking a wider view still, it cannot be denied that it is contrary to all experience to find a man, however intelligent, suddenly developing at a critical moment so complete a power of command, that those who have never obeyed him or perhaps any one before, will be certain instantly to obey; and here it appears to me that the principal danger lies in the case of an unskilled man, as the slightest hesitation, awkwardness, or error on his part is certain at once to turn him into an object of contempt or ridicule, in which case his authority would instantly be at an end.

On the whole, therefore, and setting aside as far as I can all professional bias, I am compelled to incline to the opinion that it is only deceiving the artists and visitors, and encouraging in them and all concerned a false confidence, to put a man in fireman's uniform and intrust to him the duties of a fireman, unless he has the necessary qualifications for such a responsibility.

Then comes the difficulty of getting thoroughly competent men on reasonable terms, and in this I sympathize most sincerely with managers, as the very strong, active, young men of a public fire-brigade, however trustworthy when working under discipline, and either in the immediate presence of their superiors or in constant expectation of a visit from them, are not always found capable of with-

standing the numerous temptations which beset a theatre, and the older hands would not accept the position without very high wages.

But even here I think I see a way out of the difficulty. It would perhaps be hard on a manager to find himself called on to add to his staff some three or four men at wages certainly not less than about 35*s.* a week each; but, without presuming to speak very positively on the matter, I would venture to suggest that there seems to be no very apparent reason why he should not have about his premises, in some capacity or other, three or four times that number of officials or assistants taken from the public fire-brigade of the place, and consequently certain to know what to do on the outbreak of a fire.

The supplying of a fire watch from the public fire-brigade, as on the Continent, being perhaps the best mode of all, might have been taken first; but I have placed the others before it, because such an arrangement has been tried here, and from want of numbers and other causes has not proved satisfactory. It is, moreover, to a great extent contrary to the habits of our country, and is certainly attended with very heavy expense, as the staff kept up here is barely sufficient for the work necessarily devolving on it, and every man withdrawn for even a temporary purpose has to be replaced by another, whose services must be paid for in full; so that, although a fireman may be only five or six hours

on a special duty of this kind, it is necessary to charge for him a whole day's pay. Then there is the division of authority to be considered, and I certainly hold a very strong opinion that such a division would be most dangerous, and that nothing should be done by the fire-brigade or any other public body to relieve the manager from the smallest portion of the responsibility, which ought to rest on him and him alone, of carrying out the precautions enjoined by law or public authority to insure not only the safety of every individual who visits his theatre, but also that reasonable amount of comfort which is a part of safety, and without which, in my opinion, real safety cannot exist.

I am quite sure that all the best managers would infinitely prefer themselves to undertake whatever the law requires to be done in their houses, rather than submit to interference from any public authority ; and, if such a feeling exist on their part, I should say that it ought to be encouraged, and that, subject to inspection and proper supervision, everything should be left almost absolutely in their hands, except in one matter, and that is the fireman. But I do not think they ought to be allowed to dress up a man in fireman's clothes, and pass him off as a fireman, unless he has the necessary qualifications for the office.

As I have made suggestions about some of the attendants or assistants of a theatre being men who

have previously served in a fire-brigade, I think it right to add that at present it would not be possible to provide a sufficient number of firemen for this purpose; but I have no doubt that, if the system was adopted, the men would be obtained eventually. I have carefully considered the subject from every point of view which presents itself to my mind, and I am clearly of opinion that in the first place the attendance of a sufficient number of competent firemen should be made one of the conditions on which a manager is permitted to open his doors. The mode in which the services of such men can be obtained is a matter of detail, which may very well be left to the managers themselves. The three ways which I have suggested have all their advantages and disadvantages.

The attendance of a staff of public firemen with their officers would insure the immediate adoption of the best possible measures in case of fire or panic, and would certainly give great confidence to the audience. It would, however, involve, first an amount of interference which few managers would stand, and secondly, an amount of expense which would seriously diminish the profits for which alone theatres are established.

The permanent hiring of properly trained men to act as private firemen, who would be the servants of the manager, would insure the men knowing the building and "the ways of the place" thoroughly

and taking a personal interest in the condition of all the fire-extinguishing appliances; but the services of such men are difficult to obtain, and so expensive, that even the most successful theatres could hardly afford to have a sufficient number.

Lastly, the appointment of skilled firemen to confidential and other posts would combine all the advantages of the other systems without, as far as I can judge, anything beyond a mere nominal expense; but there would no doubt be an unwillingness on the part of the managers to find themselves called on to recruit their staff from one particular source; and for this I cannot deny that there would be some justification, though I think, considering the interests at stake, that the objection ought to be, if possible, overcome.

At all events, as I said before, I am of opinion that, in addition to all other precautions, a sufficient attendance of real firemen should be made one of the conditions of opening the doors, and I have pointed out at least three ways in which such an attendance can be obtained.

In performances characterised by special danger, the hanging drapery and light movable parts of the scenery might be made dependent on a single cord, which could instantly be cut in case of need, so as to let the whole down in a heap on the stage, when it could be extinguished with water in a moment.

Clothes, drapery, hanging curtains, and all wood-

work in a theatre should be frequently steeped or washed in alum water or some other substance, which would make them uninflammable, that is to say, which would prevent their blazing up in the event of their taking fire.

A few years since, the Théâtre de Belleville was burned through a wad from a pistol fired on the stage lodging unperceived among some decorations, where it smouldered for a time, and then burst into flame. The destruction of the building would not have resulted from this trifling accident if the fittings had been soaked in alum.

Much good might result from an inspection of every theatre by a qualified person previously to the opening of the doors, and again after the closing of the doors. In the former case he should see the metal curtain moved up and down, and should ascertain that it is in proper working order; in the latter case he should leave it down.

A watch might also with advantage be kept inside a theatre at night, and its efficiency would be increased by visits from the police or some one from the outside at irregular times; but this is simply a matter of private interest, as, after the audience has once escaped, it matters little to the general public whether the building be destroyed or not.

That the existing arrangements for the safety of theatres are not efficacious is shown by a high authority, M. Mauret de Pourville, formerlly a sous-

préfet, who took the trouble to collect statistics of losses in such buildings a few years since. This gentleman, writing in 1869 under the appropriate *nom de plume* "Un Ancien Fonctionnaire," says that in the years 1867 and 1868 there were destroyed in Europe and America fifteen theatres, valued at between sixteen and seventeen millions of francs, or from £640,000 to £680,000; and some researches which I have had to make into the same subject have convinced me that his estimate is well within the mark. Indeed, one theatre alone—the Théâtre du Sultan at Constantinople—had cost over £240,000, or more than one-third of the whole.

It being then assumed that the existing arrangements are not satisfactory, it appears to be a duty devolving on some one to propose others.

The two objects to be attained are these: first to save the audience, secondly to save the property; and these objects will be best accomplished by subdividing both audience and building into as many separate risks as possible, and so arranging the general stowage of the contents as to prevent that sudden blazing up which has hitherto constituted the special danger of theatres.

All light, inflammable materials are dangerous; stores and other accessories add bulk, and so increase the danger; separate the two, and the risk is very considerably reduced.

All doors for the entrance and exit of visitors

should be made to open both ways, and should be of such light material that in any great emergency they could be forced open, even if closed and bolted.

In conclusion, it may be asserted that, although a theatre badly built and imperfectly protected is not only dangerous in itself, but a source of danger to all buildings in its vicinity, nevertheless there is no difficulty whatever, unless expense be ranked under this head, why a theatre should not be so constructed, divided, and otherwise laid out and arranged, that it might contain a smoking-room, and if necessary, even kitchens, with as perfect safety as the present refreshment saloons, and at the same time insure the absolute safety of the audience and the partial safety of the building and its contents in case of fire.

THE FIVE FIRES OF THE PARIS OPERA HOUSE,

1763, 1781, 1788, 1871, 1873.

THE recent total destruction of the well-known building in the Rue Lepelletier has served once again to direct serious attention to the frightful risks at present attaching to theatres; and when it is remembered that, notwithstanding all the precautions invariably taken, this is the fifth occasion on which the National Opera of France has been left without a home, it seems imperatively necessary for those interested in the subject to investigate the circumstances under which these terrible losses have occurred.

In the preceding pages it was asserted that, without interfering with any of the legitimate objects for which theatres are constructed and maintained, it is possible to insure the absolute safety of audiences and the partial safety of the buildings and contents in case of fire, and this opinion is here repeated and most strongly insisted on. Indeed, it must be obvious to every one considering the subject from a practical point of view, first, that it is advisable to divide theatres into several different risks, and secondly, that it is possible to do so; and

the object of the present article is to present a summary of several heavy losses caused by neglect of the principles there laid down—a neglect, moreover, persisted in by those responsible, and repeated over and over again, as the following narratives will show.

The buildings of the Paris Opera have been on fire no less than five times within the last 110 years, namely, in 1763, 1781, 1788, 1871, and 1873 respectively, and a short account of each of these fires, taken from authentic French sources, may serve to convey instruction to those willing to learn.

The Fire of 1763.

Between 11 o'clock and mid-day on the 6th of April, 1763, a column of smoke, dense and black, rose above the right wing of the Palais-Royal. Fire had suddenly broke out in the Opera.

The following account is taken from the *procès-verbal* drawn up in the office of the Hôtel de Ville immediately after the disaster :—

"On the 6th of April, 1763, about mid-day, intelligence reached the Hôtel de Ville that fire was raging with the greatest violence in the Opera House, and the officials of the bureau at once repaired to the spot ; but the damage was already beyond the reach of help, and, notwithstanding every possible exertion, everything was devoured by the

flames in a very short time, and the building and its contents destroyed from top to bottom. They nevertheless prevented the fire gaining ground in the direction of the houses looking on the Rue Saint-Honoré; but the fire attacked the Palais-Royal with so much violence that the buildings of the Cour de Cadran and the Cour des Fontaines were very much damaged.

"The old buildings abutting on the grand staircase of the theatre were entirely consumed, or very nearly so.

"It cannot be absolutely stated in what way the fire commenced, because it was the day following Easter Day, on which day there was no performance, but it so happened that they were going to make some repairs or to have a rehearsal.

"The king has charged the town to construct a provisional Opera House at the Théâtre des Machines at the Palace of the Tuileries. His Majesty, at the representation of Monseigneur the Duke of Orleans, has commanded the town to reconstruct a new Opera House according to designs which shall be approved for the purpose by his said Majesty, using the ground space which will be given to him by the Duke of Orleans, who has undertaken to pay for the acquisition of the necessary houses.

"As the king ordered the actors, actresses, and *employés* of the Opera not to leave Paris, but to attend to their ordinary work, a French concert (*concert*

français) has been established in the concert-room of the Tuileries, and, out of the total receipts realized, the town has made the directors of the Opera pay for the appointments of the actors, actresses, and *employés*, as well as the expenses of the said concerts.

"The plan for the new Opera House has been made by M. Moreau, who has been intrusted with the exercise and functions of the office of master-general of the town-buildings, and it has been approved by the king on the day indicated, in presence of Monseigneur the Duke of Orleans, M. le Comte de Saint-Florentin, Secretary of State for Paris, and M. le Prévost des Marchands."—*National Archives, Register of the City of Paris*, 1762-3.

This is the *procès-verbal* in all its dryness. The writer of the document does not venture to enter into an explanation of the causes of the fire. Collé, in his "Journal Historique," does not declare for any of the versions current in his time. The "Gazette de France" and "Le Mercure," two leading periodicals of the time, are not much more communicative. The pages of the national records contain very few manuscript pieces under the administration of the Royal Academy of Music during the year 1763; but the "Mémoires secrets de Bachaumont" abandon this reserve, and say that the fire began at about eight o'clock in the morning, through the fault of the workmen em-

ployed in the interior, and that it increased by their neglecting to call help and attempting to conceal it; and it is added that, by a singular infringement of the regulations, the porters had deserted their lodge. Castil-Blaze has seized upon these statements, and, in his history of the Academy of Music, has worked out of them a fantastical story, in which he allows his southern imagination full career. According to him the fire came from a little room near the apartments of M. de Montausier, Governor of the Palais-Royal.

"There was a stove, the funnel of which entered the chimney of the ballet-girls' dressing-rooms. They had forced the heat in this stove, and when it was quite choked the funnel split, and set fire to the chimney. Then the flame escaping caught some woodwork, which lighted up instantly like a match. It occurred during the closing for Easter; there was not a workman in the building, not as much as one of the call-boys, and even the *concierge* had gone out. A single singer, preparing himself for his *début*, came on the stage early in the morning to try his voice, observed the fire, and rushed out crying for help; but before help arrived all was lost." This is Castil-Blaze's story; but as to its truth or error no opinion is offered.

Another account is that of a machinist named Boullet, who was an eye-witness of the fires both in 1763 and 1781, and was probably actively engaged

in extinguishing them, as it appears that he was wounded twice. This man said that a sweeper, who was employed in the morning, left his work and went out, after having placed his candle on the counterweight of the drop-scene curtain. The light set fire to the ropes of the counterweight; the curtain, deprived of its balance, came down, and the ropes serving as a vehicle for the flame, mounted to the friezes, which in their turn became enveloped.

At mid-day the fire was master of its prey, and defied all human intervention, threatening on one side the Palais-Royal by the wing of the building adjoining the Opera House, and on the other side the Rue Saint-Honoré, by the houses of the *cul-de-sac* of the Opera. In the garden of the Palace two immense chains were formed—chains of coarse cloth and of silk—composed of persons of every rank, without distinction of dignity, age, or even sex. One sought to save the archives and the celebrated pictures of the Galerie; the other supplied water for the fire-engines, which worked without cessation. About two thousand persons were employed in this way. In the middle of the courts and passages were heaped up piles of furniture and property, under the guns of the Duke of Orleans, and guarded by his servants.

At about half-past one o'clock the cupola of the grand staircase of the Palace came down, and then a frightful noise was heard: it was the dome of

the Opera House falling in, and with it some of the adjoining roofs, which thus poured down their *débris* incessantly, and added fuel to the fire.

After this the fire still raged with great violence, and it was not until six o'clock in the evening that the quarter surrounding the Palais-Royal was out of danger.

There are many other particulars of interest connected with this fire; but the principal points for consideration here are, first, the fact that the building was beyond the reach of help immediately after the fire was discovered, and was totally destroyed within an hour and a half of that time; and, secondly, the almost absolute certainty, that if the building, instead of being all in one risk, had been divided into several, this great catastrophe would have been averted.

After this fire a great many projects were started for the site and construction of a new Opera House. Some wanted to have it at the Caroussel, and others at the Louvre; but a proposal of the Duke of Orleans was adopted. The duke repaired to Versailles, and asked the king to allow the Opera to remain at the Palais-Royal, offering the site, and a hundred thousand crowns towards the expenses. The king decided in favour of the duke, and during the reconstruction the Opera found a commodious home at the Tuileries, in the part known as the "Salle des Machines," where the "Concerts

Français" were opened on the 29th of April by the artists of the Academy of Music.

THE FIRE OF 1781.

The new Opera House, which was commenced in 1764, and publicly inaugurated on the 26th of January, 1770, was constructed at the expense of the city, from drawings by M. Moreau of the Academy of Architecture, on the land furnished by the Duke of Orleans.

Several works state that it was situated in the Cour des Fontaines; but this is hardly a correct description, as no egress or entrance, either of the chorus, the corps de ballet, or the supernumeraries, was possible on that side.

It occupied about the space included between the Rue de Valois and the Rue des Bons Enfants, with a façade on the Rue Saint-Honoré. The *cul-de-sac* of the Opera, as also the block of houses formerly extending along the Rue des Bons Enfants, had disappeared, absorbed in the plan of the building. The Rue de Valois is the approximate axis round which the two salles of the Palais-Royal were turned, from left to right. This is not very clear, but it is difficult to define the site more accurately for those only acquainted with the Paris of 1875.

The interior arrangement of M. Moreau's house was thus described in the programme:—

"*Second Theatre of the Palais-Royal.*

"The opening of the stage is 36 ft. wide and 32 ft. high. This advantageous arrangement brings all the nearer the end of the auditorium (*avant-scène*) and causes more equality in the different situations of the spectators. Its form is round, giving at the top a beautiful oval, filled by an allegorical painting, of which mention is made elsewhere, in order not to distract the eyes of the reader from the object here presented.

"The auditorium is decorated by four columns of a rich and elegant order, the flutings of which are open, so that this part, generally devoted only to decoration, furnishes the best and most commodious places. Their shaft is divided by drums at the height of the ledge of the boxes contrived in their intervals, which is perhaps prejudicial to the elegance of the Corinthian order, but, on the other hand, makes more prominent these same boxes, which the architect would doubtless not have done, and still less those formed in their socles or plinths, had he not been obliged to reconcile pecuniary interests with artistic decoration."

The building was made to contain 2,500 spectators, all said to be nearly equally well placed, and the description goes on :—"The convenience of the public has not been forgotten, as shown by the exits. Safety is one of the points to which the

most scrupulous attention has been directed ; three reservoirs, containing together about 200 hogsheads of water, are placed in situations where they will be the most useful in case of fire. The actors' dressing-rooms are all constructed of brick, and vaulted, and most of the stairs are of stone."

The result of the arrangements here so confidently described appears further on.

On Friday, the 8th of June, 1781, the programme of the opera was composed of "Orphée," words by M. Moline, music by M. le Chevalier Glück, preceded by the act of "Apollon et Coronis," set to music by the Messrs. Rey, the one music-master of the king's chamber, the other musician in ordinary of his Majesty's chapel.

Ten minutes had hardly elapsed since the end of the performance. It was half past eight o'clock in the evening ; the opera at that time began at five o'clock, and the public had left. The people who had danced in the last ballet were quietly undressing in their rooms, when on a sudden cries of anguish resounded on the scene. "Fire! fire!" For the second time in eighteen years fire was going to devour the Opera.

What was the origin of it? Perhaps it was never rightly known. "It is presumed," says Bachaumont, "that it may have been originated during the third act of 'Orphée,' representing the fire of hell, the flakes of which, flying to the roof, produced there

a smouldering fire, which at the end of a certain time burst out and burnt up everything." According to other accounts, a candle of a side frame might have communicated its flame to the curtains. What is certain is, that the fire caught a sort of gauze made to represent the sky.

At first a glass of water would have sufficed to extinguish it; but, by an unheard of negligence, there was not a drop of water in the reservoir of the theatre. A cry was raised to cut the ropes of the gauze, and one of the workmen, a machinist, succeeded in doing this at one side, but at one side only; the gauze inclined, crossed the stage diagonally, and fell against the canvas at the upper end. This movement redoubled the activity of the flames, which then invaded the stage and the whole building with the rapidity of lightning.

An immense furnace had become alight. Towards half-past nine o'clock the timber-work of the edifice gave way, opening out a passage to a column of fire more than 300 ft. in height. Horrible gleams illuminated all the neighbourhood; in the distance, in the cross-ways, and on the public squares, the assembled people, with their eyes fixed on that spout of flame which lost itself in the azure of heaven, thought there was a fall of stars from the height of the firmament. For two hours this fantastic serpent rose into the air; myriads of fire-flakes, burning charcoal, and innumerable

sparks detached themselves from the mass, and went away, carried by a light wind, to fall in the Rue Saint-Martin and in the Faubourg Montmartre. Happily rain came on; but without this unexpected aid Paris, like London, might perhaps have had her historical fire. Such is the account given at the time by the spectators.

The lesson to be learned from this catastrophe is, that the whole place was quickly alight, which would not have been the case if it had not been all in one risk.

On the roofs of the Royal Library and the buildings of the Douane there were workmen on watch. Help was directed by the Prévôt des Marchands, the lieutenant of police, the commissaires of eleven quartiers, and the Duc de Chartres in person. Under their orders the Gardes Françoises and the Gardes Suisses, the Garde de Paris, the récollets, monks of the order of St. Francis, capucins, cordeliers, and Franciscan friars of 1763, did their duty bravely. A letter inserted in the "Journal de Paris" of the 13th of June pays in the name of all the inhabitants of Paris a just tribute of praise also to the corps of firemen commanded by Morat. "I venture to assert," says the author of the letter, "that there is no extensive fire which does not give rise to some heroic action on their part; but history does not engrave their names in its annals." The "Gazette" and the newspapers do not celebrate

their actions, and they only become on that account the more worthy of our homage, since the courage, which leads them every day to brave death, never has either of the two most powerful incentives which lead men to do right—glory and fortune. In this last fire, which spread consternation over the capital, what courage, what intelligence, what indefatigable activity was needed to circumscribe the conflagration in its first central point, and to prevent it from spreading beyond! Thanks to them, the Palais-Royal was preserved; there were only damaged the chambers contiguous to the Opera on the side of the Cour des Fontaines. Of the buildings of the Opera, there only remained the boxes of the principal actors by the green-room, and the treasury. The large saloon underwent the full force of the flames, but it was not entirely destroyed. The bust of Rameau in the grand staircase was broken; those of Lulli and Glück escaped the fate of their companion.

In the midst of this frightful tumult the men and women dancers, who were half undressed in their rooms at the outbreak, and the workmen employed about the stage and wings, overcome with panic and blinded by smoke, were unable to find the outer doors, and perished in the raging furnace.

On the 10th of June, eleven dead bodies half burned away were found under the ruins, and an old woman who lived in the Cour des Fontaines died of

fright the same day. These twelve are probably all that were known with any certainty to have lost their lives ; but on the 20th of June, when the last of the *débris* was being cleared away, some other bones were found, though the reports preserved in the archives do not make mention of this fact. During the first days people greatly exaggerated the number of the victims, counting as dead all the *employés* and *artistes* of the theatre whom wounds or prudence kept at home ; but, after several appeals made by the administrator, it was generally acknowledged, that beyond the unfortunate people already mentioned, whose bodies had been found on the 10th, there were probably no other losses of life among the *personnel* of the Opera. Gardel le Cadet, as to whose fate some fear had been experienced, soon appeared again safe and sound, quite disposed for the *sarabande* and the *chaconne.* An ill-timed and unseasonable fit of modesty imperilled the life of la Guimard. Almost without clothes in the room where she changed her toilet, she did not dare to leave, and was on the point of being suffocated, when a machinist had sufficient presence of mind to roll her up in the curtains and carry her out. Beaupré killed himself, jumping from the third floor. Castil-Blaze made a dramatic episode out of the death of little Vidal. " Huart, a vigorous dancer and a tall man, having only two floors to jump, made towards the roof of a shop, slid into the Cour

des Fontaines, and fell on his feet without hurting himself. His valet, a boy of fifteen, was at the window, and did not dare to throw himself out of it. Huart stretched his arms to him, called him, encouraged him, saying that he was ready to receive him, and to ward off the blow from him. Nothing could decide this unfortunate boy, not even the fire which soon reached him, and burnt him alive under the eyes of his master."

The case is affecting; but the weak point of Castil-Blaze's story is that M. Huart was very grievously wounded by his own fall, and not in a condition to undertake the athletic feat attributed to him.

After the following story of the violinist Châlon there may be no difficulty in believing that the Garonne was flowing through Paris in the time of Castil-Blaze.

"Châlon, a violinist, remained behind a few steps, and the wing of a slamming door shut in front of him. He made vain efforts to open it, but the pressure of air glued and fixed the wing to its frame. Happily the door joined badly at the bottom, and the musician stripped off all his clothes, and, lying down on his face and hands, compressed himself like a cat or a lizard, passed as from a flatting mill, and managed to squeeze himself under the door, leaving on it the skin of the muscles of his back; and several powerful machinists pulled him from

the other side. Châlon recovered from it, but for the rest of his life he could not make the slightest bow; stiff as an Egyptian statue, he saluted with his hand." In this case it is difficult to judge whether the man or the story was the more elastic.

Most of the dancers took flight by the tops of the neighbouring houses, jumping from gutter to gutter, and precipitating themselves into the streets at the risk of breaking their necks.

Some of the dancers were able to find the passages of outlet on the Rue Saint-Honoré, and fled in their chemises by the Place du Palais-Royal. No one laughed much at the time, but shortly afterwards they did not restrain themselves. The *beaux esprits* of the Terrace des Feuillants repeated among themselves numbers of anecdotes and jokes, and amongst the rest the following playful letter, attributed to Sophie Arnould, in which she made allusion to the misadventure of these poor women :—

"Paris, 26th June, 1781.

"This frightful fire has left the divinities of the Opera almost naked. The fire communicated to the rooms in which their clothes were kept, and it was only by a miracle that they managed to save some.

"Venus's girdle is consumed ; the Graces will go without veils ; Mercury's cap, his wings, and his caduceus, are no more ; for a long time Love has had nothing to lose at the Opera, and so has lost

nothing; but the shield of Pallas and the lyre of Apollo are in ashes.

"The chariot of the Sun and of Nature, which hung so gracefully in the air in the very natural prologue of 'Tarare' has not been spared any more than the folds of gauze which draped very palpable shadows. I should never finish, dear friend, if I were to tell you everything we have lost.

"But money can repair all such losses."

The Parisians, however, had not waited for Sophie Arnould's letter to amuse themselves on the subject of the fire.

On the very next day after the event, the crowds remained stationary on the Place du Palais-Royal, contemplating sorrowfully the ruins heaped up under their eyes. A cart laden with costumes saved from the flames was crossing the Place; a porter thought of putting on a plumed helmet which he found at hand; then, throwing over his shoulders a purple cloak, he stood upright in the cart, proudly draped in these tinsels, with the superb countenance of a Roman emperor ascending to the Capitol. The sadness of the spectators changed as if by magic into loud shouts of laughter, and the porter was enthusiastically applauded.

The ruins of the Opera were still smoking when it became the great fashion in Paris to wear a stuff known as *couleur feu*, or *fumée d'Opéra*.

The following is a list of the decorations burnt in

the fire of 1781, taken from the official report deposited in the national archives. This report is divided into three sections, comprising the inventory, firstly, of thirty-three decorations, all to be re-painted, but able to be utilized for the Salle des Tuileries, where it was already decided to move the Opera; secondly, of burnt decorations; thirdly, of forty-eight decorations which were intact, but not fit to be used for the Tuileries on account of their dimensions.

Burnt Decorations.

Palace of Ninus, used in the "Iphigénie" of M. Glück.

Palace of Aménophis in the "Iphigénie" of M. Piccini.

The end of the palace of Zélindor, in "Le Bon Seigneur."

Hamlet of the Devin du Village, in "Coronis."

The entrance into hell, in "Orphée."

The enchanted island of Thésée, in "Orphée."

Temple of Amphion, in the "Iphigénie" of M. Piccini.

Temple of Jupiter, in "Hercule mourant."

Public square of Alceste.

Mountain of Sylvie.

The twelve heavens.

The curtain of the drop-scene.

Portico of the palace of Agamemnon.

The forecourt of the palace of Admète, in "Andromaque."

The burning palace used in the "Bon Seigneur."

Hamlet of the "Bon Seigneur."

Desert and labyrinth in "Orphée."

Temple of Maspha, in the "Iphigénie" of Glück.

Subterranean temple of Arimane, in the "Iphigénie" of M. Piccini.

Temple of Love, in "Orphée."

The Elysian fields, in "Orphée."

The farm in the "Iphigénie in Aulide."

The decorations of the ball-room generally.

The tomb of Euridice.

To this extract from the losses of the State must be added the losses of all kinds caused to individuals. The inhabitants of the Palais-Royal and the adjacent streets missed or lost in their nocturnal removal a number of articles, clothes, and furniture, which the "Affiches de Paris" of the month of June reclaimed by hue and cry. As to Sophie Arnould, so fertile in jests on the dancers of the Opera, she did not feel safe in the quartier of the Palais-Royal, and removed at once from the Rue des Petits-Champs, where she occupied an apartment, to the Rue Caumartin, which was better situated for exercising her wit at liberty.

The fire of the Opera, the support of so many families, dealt a terrible blow to all concerned in it. The director himself, Dauvergne, a respectable man

of seventy years of age, and encumbered with numerous children, was obliged to ask for an extraordinary gratuity to assist towards the needs of his house-keeping, and many others were for a long time dependent on charity.

The concerts at the Tuileries were not attended with such *empressement* as to promise large receipts, and the administration decided on the transfer of the Opera to the Salle des Menus-Plaisirs, where the royal troupe inaugurated its performances on the 14th of August, 1781, by "le Devin du Village" followed by "Myrtil et Lycoris."

An order had been given to Dauvergne not to grant leave to any member of the Academy, and the order was rigorously executed; Noverras and Mademoiselle Ollivier alone obtained a pass from the minister to go, the one to Bordeaux, the other to Brussels.

M. Adolphe Jullien has lately published in the "Revue de France" a very curious article on a plot contrived between Rousseau, Lays, and Chéron to escape to Brussels without leave. These gentlemen looked upon it as unworthy of their talent to play at the little "Salle des Menus," and estimated that the contents would be more valuable than the building. Lays was stopped at the diligence; Chéron kept himself quiet; but Rousseau, notwithstanding the exchange of diplomatic notes between Belgium and France, gained the frontier,

baffled the police, and succeeded in reaching Brussels.

The projects concerning the construction of an Opera House continued to go on. The sites proposed were the "Salle des Elèves de l'Opéra" on the Boulevard, the "Colisée," the "Vieux Louvre," the "Carrousel," the fair of "Saint-Germain," the "Jardin de l'Infante," the grounds of the "Filles-Dieu," and others. Every Parisian had his Opera House in his head. "It appears," wrote M. de la Ferté to the minister on the 20th of July, "that the public desires the Opera so ardently, that yesterday at the Redoute-Chinoise they were heard to declare openly that, even if the Opera should be placed at Pantin or at the antipodes, they would go to hear it, which shows at least a great enthusiasm for this spectacle."

At last, the architect Lenoir, whose plan had been chosen, was intrusted with the construction of a provisionary Opera House near the "Porte Saint-Martin."

The Fire of 1788.

The Salle des Menus-Plaisirs had the distinguished honour of receiving the Opera within its walls in 1781.

On Friday, the 18th of April, 1788, fire broke out in the property rooms of this theatre, near the forage stores of the king's stables, and rapidly

spread over the building. All the king's property was saved, but the stores in the Rue Poissonnière and the Rue Richer were burnt, and the decorations of the Opera, which had been deposited at the Menus-Plaisirs after the fire of 1781, were destroyed by the flames.

No lives were lost on this occasion.

The lesson to be learnt from this fire is as before: if the building had not been all in one risk, the fire could not have spread.

The Fires of 1871.

The Salle de la Porte Saint-Martin was built by Lenoir. It was commenced on the 2nd of August, 1781, and opened on the 26th of October the same year; that is to say, within eighty-six days of its commencement. This house, which had been used for the Opera from 1781 to 1794, was set on fire during the last days of the Commune, but it was not totally destroyed. The loss on the building itself was estimated at about 600,000 francs, or £24,000.

The Salle des Machines in the Tuileries, where the Opera, driven away by fires elsewhere, took refuge twice, first in 1763, and secondly in 1781, was destroyed by fire under the Commune in 1871.

Owing, however, to the exceptional character of the circumstances attending that dismal time, no

trustworthy lesson can be learned from either of these fires.

THE FIRE OF 1873.

The Opera House in the Rue Lepelletier was built by M. Debret. It was commenced on the 13th of August, 1820, and opened on the 19th of August, 1821. The total cost was 2,550,000 francs, or £102,000. This house was remarkable as being the first theatre in which gas was used.

It was not a well-constructed theatre, but it was supposed to be fitted with tanks, engines, and every appliance for extinguishing fire, and there was always a strong guard of *pompiers* within the building, whether the performance was going on or not.

On the night of Tuesday, the 28th of October, 1873, a fire broke out in this house at a quarter past eleven o'clock, almost exactly the same time as the fire at the Surrey Theatre in January 1865, and Her Majesty's in December 1867.

The fire was discovered in the decoration store, which was some thirty or forty feet below the theatre proper.

The regular guard of *pompiers*, consisting of fourteen, were on the spot, and immediately got to work; but the men were overpowered by heat and smoke, and were unable to reach the seat of the fire. A north-east wind was blowing, which drove the

flames through the house, and in a very short time the whole building was one mass of fire, and there was no possibility of saving it.

By twelve o'clock the flames were pouring out of every window, and threatening to destroy the whole neighbourhood. At a little after one o'clock in the morning the gigantic lustre came down with a tremendous crash. At about two the ceilings and the roof fell in with a loud report, which was heard at a great distance; and at four o'clock nothing remained of the well-known Opera House but a heap of ruins.

The cause of the fire has not been ascertained, and it may now be presumed that it will never be known with certainty.

The number of engines engaged in extinguishing the fire was as follows:—

In the Rue Lepelletier, 4 manual fire-engines and 1 steam fire-engine; in the Rue Rossini, 10 manuals; in the Cour d'Honneur, on the Rue Drouot, 4 manuals; on the Boulevard des Italiens, 1 steam; and in the Passages de l'Opéra, 7 manuals —altogether, 2 steam and 25 manual engines.

The following is a summary of the official accounts of the losses by this fire:—

About 5,200 costumes were burned, and those saved were injured to the extent of about 60 per cent. of their value.

Fifteen sets of scenery were burned, including

the whole set for each of the following, namely: La Juive, Les Huguenots, La Favorite, Le Prophète, Le Trouvère, Don Juan, L'Africaine, Hamlet, Faust, Freischütz, La coupe du roi de Thoulé, La Source, Coppelia, and Gretna Green, and that of the fourth act and two pictures of Jeanne d'Arc. Besides these there were 74 sets of various kinds, of which the frames were at the stores in the Rue Richer, but the upper parts and draperies were burned.

A large number of musical instruments and bells, and one organ, all the property of the State, were destroyed.

The whole of the "property" stores were destroyed, as well as the stage curtains, the oil and gas-fittings, the furniture of the auditorium and saloons, the principal part of the armoury, the electric lighting apparatus, and the fire-service.

Eighteen busts of considerable historic value were destroyed, representing Homer, Molière, Racine, Quinault, Lully, Rameau, Rousseau, Voltaire, Grétry, Glück, Piccini, Beethoven, Philidor, Méhul, Lesueur, Paer, Etienne, Halévy. Some of these were in plaster, among others that of Rameau, the marble of which was destroyed in the fire of 1781, when those of Glück, Lully, and Quinault escaped only to perish now. The loss of the Glück, a magnificent piece of marble by Houdon, is particularly regretted in Paris. Only

two months previously this bust and that of Lully were lent to M. Baudry for one of the great drop-scenes which he is making for the new Opera, with pictures of celebrated musicians, and they had been returned by him about six weeks before the fire.

The statue of Rossini escaped the flames, but was broken by falling materials, and was discovered in fragments among the ruins; and the statues of M. Duret, which were in the saloon, were also destroyed.

The estimate of the loss is as follows:—

Building . . .	1,000,000	francs, or	£40,000
Fittings and Furniture	300,000	„ „	12,000
Scenery and Costumes	1,000,000	„ „	40,000
	2,300,000	„ „	£92,000

From this it will be seen that the building must have greatly deteriorated in value during its short existence.

The only casualty in the way of loss of life was that of Corporal Bellet of the *pompiers*, who was killed while doing his duty bravely, as firemen in Paris always do. This man received the honour of a public funeral at the church of Val de Grace, and a suitable monument is to be erected over his remains.

It is a strange subject for reflection that, of all the regular or provisional buildings in which the

Paris Opera found a home, there is not one which has escaped a conflagration.

The first Opera House in the Palais-Royal was burned in 1763; the second, also at the Palais-Royal, was burned in 1781; the provisional house at the Salle des Menus-Plaisirs was burned in 1788; those at the Porte Saint-Martin and the Tuileries respectively in 1871; and that in the Rue Lepelletier in 1873.

It is also worthy of remark that all these fires, except, perhaps, those of the Commune, broke out in the intervals between the performances from want of sufficient precaution, and that they spread in consequence of bad construction.

The lesson to be learned from all this is, that if a theatre be properly constructed, properly divided, and properly protected, these frightful risks and losses may be avoided.

In conclusion, it is once again repeated that, without interfering with any of the legitimate purposes for which theatres are constructed and maintained, it is possible to insure the absolute safety of an audience, and the partial safety of a building and property in case of fire; and it is hardly too much to venture on a prophecy based on the results of practical inspection and observation, that the splendid building known as the "Grand Opéra" recently constructed by M. Garnier in the Place de la Chaussée d'Antin, will, if provided

between the stage and the auditorium with a curtain capable of resisting the effects of heat and flame for about fifteen minutes, attain this desirable object more nearly than any other yet constructed, and that it is likely for years to come to be, in respect of convenience, comfort, and safety, the model theatre of the world.

THEATRES DESTROYED BY FIRE.

The following is a list which I have collected with much difficulty, and from many sources, of theatres *destroyed* by fire, and I believe it to be correct as far as it goes, but not at all complete, nor even approaching to completeness.

Of theatres merely damaged, but not destroyed, it is impossible for me, at present, to give an estimate.

Year.	Place.	Name of Theatre.
1672	London . .	Theatre Royal (now called Drury Lane). 1st fire
1763	Paris . . .	Opera House, Palais-Royal. 1st fire
1772	Amsterdam .	Amsterdam Theatre
1778	Saragossa . .	Saragossa Theatre
1780	Glasgow . .	Glasgow Theatre. 1st fire
1781	Paris . . .	Opera House, Palais-Royal. 2nd fire
1787	Paris . . .	Théâtre des Délassements-Comiques, Boulevard du Temple

Year.	Place.	Name of Theatre.
1788	Paris . . .	Opera House, Salle des Menus-Plaisirs. 3rd fire
1789	London . .	Opera House (now Her Majesty's Theatre). 1st fire
	Manchester .	Manchester Theatre
1792	Falmouth . .	Falmouth Theatre
	London . .	Pantheon
1794	London . .	Astley's Amphitheatre. 1st fire
1798	Paris . . .	Théâtre Lazary
	Paris . . .	Le Cirque, Jardin du Palais-Royal
1799	Paris . . .	Théâtre Française, Salle de l'Odéon. 1st fire
1803	London . .	Astley's Amphitheatre. 2nd fire
	Boston, U.S. .	Columbia Theatre. 1st fire
1804	Boston, U.S. .	Columbia Theatre. 2nd fire
1805	London . .	Circus (now Surrey Theatre). 1st fire
1808	London . .	Covent Garden Theatre. 1st fire
1809	London . .	Theatre Royal (now called Drury Lane). 2nd fire
1811	Virginia, U.S. .	Richmond Theatre, Richmond
1816	Naples . . .	Théâtre de St. Charles
1818	Paris . . .	Théâtre Français, Salle de l'Odéon. 2nd fire
1823	Munich . .	Munich Theatre
1826	London . .	Royalty Theatre, Wellclose Square
	Paris . . .	Cirque Olympique, Rue du Faubourg du Temple
	Paris . . .	Ambigu Comique
1829	Glasgow . .	Theatre Royal
1830	London . .	English Opera House (now Lyceum Theatre)
	London . .	Astley's Amphitheatre 3rd fire
	London . .	Amphitheatre, Argyle Rooms
1836	Paris . . .	Folies Dramatiques, Basse du Temple
1837	Paris . . .	Théâtre de la Gaîté
1838	Paris . . .	Théâtre Italien
	Paris . . .	Théâtre de Vaudeville, Rue du Chastres
1839	Paris . . .	La Salle du Diorama, Rue de Bondy. 1st fire

Year.	Place.	Name of Theatre.
1839	Cheltenham .	Cheltenham Theatre
	Glasgow . .	Batty's Theatre
1841	London . .	Astley's Amphitheatre. 4th fire
1842	Glasgow . .	Cook's Circus. 1st fire
1843	Berlin . . .	Berlin Theatre
1844	Manchester .	Theatre Royal
1845	Glasgow . .	City Theatre
	Glasgow . .	Cook's Circus. 2nd fire
1846	Canada. . .	Quebec Theatre
	London . .	Garrick Theatre
1847	Baden . . .	Grand Ducal Theatre
	Carlsruhe . .	Carlsruhe Theatre
1848	New York, U.S.	Park Theatre
	Glasgow . .	Adelphi Theatre
1849	London . .	Olympic Theatre
	Paris . . .	Théâtre du Diorama, Bazar Bonne Nouvelle. 2nd fire
1852	Boston, U.S. .	Tremont Theatre
1853	Edinburgh . .	Adelphi Theatre
	London . .	Islington Fields Circus
1855	Bordeaux . .	Théâtre des Variétés
	Angers . . .	Théâtre de la Ville
1856	London . .	Pavilion Theatre, Whitechapel
	London . .	Covent Garden Theatre. 2nd fire
1859	Hull . . .	Theatre Royal. 1st fire
1860	Namur . . .	Namur Theatre. 1st fire
1862	Namur . . .	Namur Theatre. 2nd fire
	Bath . . .	Bath Theatre
1863	Plymouth . .	Plymouth Theatre
	Jersey . . .	Theatre Royal
	Glasgow . .	Glasgow Theatre. 2nd fire
	Vienna . . .	Théâtre Treumann
	Rome . . .	Théâtre Alberti
	Barcelona . .	Barcelona Theatre
	Boston, U.S., .	Grand National Theatre
1864	Chambéry . .	Chambéry Theatre
1865	Edinburgh . .	Royal Theatre
	London . .	Surrey Theatre. 2nd fire
	Sheffield . .	Theatre Royal
	Stockholm . .	Théâtre du Parc
	Verona . . .	Théâtre Mondini
	Breslau . . .	Theatre Royal

Year.	Place.	Name of Theatre.
1866	London . .	Standard Theatre
	Cincinnati, U.S.	Opera Theatre
	Constantinople	Théâtre Impérial
	New Orleans, U.S. . . .	Grand Theatre
	Paris . . .	Théâtre des Nouveautés
1867	Bourges . .	Théâtre de la Ville
	Namur . . .	Namur Theatre. 3rd fire
	New York, U.S.	Bowery Theatre
	New York, U.S.	Winter Garden Theatre
	St. Louis, U.S.	Théâtre Comique
	Philadelphia, U.S. . . .	Varieties Theatre
	Madrid . . .	Théâtre du Conservatoire
	San Francisco .	Great American Theatre
	London . .	Her Majesty's Theatre, Haymarket. 2nd fire
	Paris . . .	Théâtre de Belleville
1868	Turin . . .	Theatre Nota
	New York, U.S.	Butler's American Theatre
	Vienna . . .	Orpheum Theatre
	Venice . . .	Théâtre de Trévise
1869	Glasgow . .	Prince of Wales's Theatre
	Hull . . .	Hull Theatre. 2nd fire
	Durham . .	Durham Theatre
	Dresden . .	Court Theatre
1870	Glasgow . .	Alexandra Theatre
1871	Paris . . .	Opera House, Salle des Machines. 4th fire
1873	Malta . . .	Malta Theatre
	Paris . . .	Opera House, Rue Lepelletier. 5th fire
1875	Edinburgh . .	Theatre Royal
	Leeds . . .	Theatre Royal
	Nevada, U.S. .	Opera House
	Lyons . . .	Bellecour Theatre
	Edinburgh . .	Southminster Theatre
	Prussia . . .	Barmen Theatre

For Casualties in Theatres after 1876 see page 70.

In addition to the destruction of theatres there have been many accidents with consequences in themselves more or less serious, but suggesting in a most painful manner what might have happened in full houses or under difficult circumstances.

Thus, for instance, in the Drury Lane fire of 1672, 60 houses besides the theatre were destroyed, and their inhabitants made homeless ; in the Saragossa fire of 1778 more than 600 persons lost their lives ; in the Paris Opera House fire of 1781 at least 12 lives were lost, and some authorities make the number 20 ; in the Haymarket Theatre in London during a royal visit in 1794, there was a great crowd, and, although there was no fire, 16 persons were killed and many wounded ; during the same year, at Astley's first fire, numerous houses adjacent to the Amphitheatre were burned, and their inhabitants driven into the streets ; in 1803, at Astley's second fire, 40 houses were destroyed ; in 1807 there was a false alarm of fire at Sadler's Wells Theatre, and 18 persons were trampled to death ; in 1811, when the theatre at Richmond, Virginia, was destroyed, nearly 100 persons lost their lives ; in 1818, at the second Opera House fire of Paris, 12 *pompiers* were severely injured ; in 1828 the Brunswick Theatre in London fell down on, I believe, the opening night, and numbers of persons were wounded, and some killed ; in 1841, at Astley's fourth fire, 23 houses were destroyed, one life was lost, and several horses,

zebras, and other animals were burnt to death; in 1846, at the Quebec Theatre fire, many lives were lost; in 1847, at the Carlsruhe Theatre fire, 104 persons lost their lives; in 1853, at the circus fire in Islington Fields, many horses and other animals were burned to death; in 1858, there was a false alarm of fire in the theatre known then as the Cobourg, and now as the Victoria, and 16 persons perished; in 1865, at the fire in the Royal Theatre, Edinburgh, six lives were lost, and at the Barmen Theatre fire of 1875 three persons lost their lives.

This account of accidents and the previous list are merely collected from such sources as happen at the moment to be at my command. I have no doubt whatever that, if I had more time at my disposal, both lists could be very largely increased.

It is to be hoped, however, that the casualties here enumerated, although incomplete in number and imperfect in detail, may be considered of sufficient importance to attract the attention of those authorities who are intrusted with the duty of looking after the safety of life in theatres, if any such authorities exist in this country.

CASUALTIES IN THEATRES.

(SECOND EDITION.)

1876.

Date.	Place.	Name of Theatre.
Feb. 3	Madrid . . .	Teatro de Romea
„ 5	Cincinnati . .	Robinson's Opera House
March 2	Leeds . . .	Amphitheatre
„ 17	Springfield, U.S.	Opera House
April 25	Rouen . . .	Théâtre des Arts
May 13	Frankfort-on-Main	Skating Rink Theatre
„ 27	Trieste . . .	Mauroner Theater
June 22	Baltimore, U.S.	Adelphi Theatre
July 23	Hamburg . .	Central Halle
Aug. 19	Rotutch-Sauerbrunn, Germ.	Landschaftliches Theater
Sept. 26	Metz . . .	Walter-Theater
Oct. 11	Sandy Hill, U.S.	Opera House
„ „	Lerida, Spain .	Catulonien Theatre
„ 30	San Francisco U.S.	Chinese Theatre
Nov. 13	Madrid . . .	Teatro del Circo
„ 20	California, U.S.	Sacramento Theatre
Dec. 5	Brooklyn, U.S.	Brooklyn Theatre
„ 8	Albany, U.S. .	Adelphi Theatre
„ 21	Marseilles . .	Circus Cortrelly
„ 27	Doncaster . .	Doncaster Theatre

1877.

Jan. 28	Indianapolis, U.S.	Opera House
Feb. 4	Oerebro, Germ.	Stadttheater
„ 8	Murcia, Spain .	Teatro de Romea
„ 22	Waco, U.S. .	Opera House

Date.	Place.	Name of Theatre.
Feb. 25	Philadelphia, U.S.	Fox's New American Theatre
March 6	Fostoria, U.S. .	Leonard's Opera House
„ 12	Providence, U.S.	Elliott's Opera House
April 4	Edinburgh	Queen's Theatre. 2nd fire
June 30	St. John's New Brunswick	Academy of Music
„ 30	„ „	Lyceum Theatre
July 9	Liverpool . .	Rotunda Theatre
Oct. 10	Papa, Hungary	Sommertheater
Nov. 24	Worcester . .	Theatre Royal
Dec. 11	Cardiff . . .	Theatre Royal

1878.

Jan. 13	Rouen . . .	Théâtre des Fantaisies Lyriques
„ 22	Wandsbeck nr. Hamburg	Reisner Theater
Feb. 4	Wigan . . .	Queen's Theatre
„ 3	Calais . . .	Italian Circus
„ 4	Chicago . .	Academy of Music
Mar. 26	London. . .	Elephant and Castle Theatre
April 6	Oldham. . .	Theatre Royal
„ 27	South Shields .	Alhambra Music Hall
May 1	Wittenberge .	Central Hall Theatre and Concert-room
„ 11	Ahmednugger, India	Tent Theatre
June 13	Plymouth . .	Theatre Royal. 2nd fire
July 10	Frankfort . .	Old Town Theatre
„ 16	Bradford . .	Prince's Theatre
„ 19	Mont de Marsan	Amphitheatre
„ 19	Nischny-Nowgorod	State Theatre
Aug. 25	Cologne . .	Gertrude Theatre

Date.	Place.	Name of Theatre.
Sept. 2	Canal Dover, Chio, U.S.	Seel's Circus
„ 30	Blackburn . .	Star Theatre
Oct. 11	Liverpool . .	Colosseum
Nov. 14	Bradford, U.S..	Comique Theatre
Dec. 9	Constantine .	Algiers Theatre
„ 9	Valparaiso . .	Victoria Theatre
„ 9	Osaka, Japan .	Feen Theatre

1879.

Jan. 21	Elizabeth, N.Y. U.S.	Clark's Opera House
Feb. 2	Glasgow . .	Theatre Royal
„ 5	Neumünster .	Garden Theatre
„ 23	Glasgow . .	Prince of Wales Theatre
Mar. 2	Reno - Nevada, U.S.	Academy of Music
„ 8	London. . .	Polytechnic
„ 16	London. . .	East London Theatre
„ 25	Derby . . .	Keith's Circus. 2nd fire
April 13	Verden . . .	Theatersaal
„ 19	Eureka, U.S. .	Opera House
„ 19	Rouen . . .	L'Alcazar
„ 24	Reichenberg .	Stadttheatre
June 20	Berlin . . .	Urania Theater
July 28	Pillau . . .	Stark Theater
Aug. 7	Cagliari . .	Teatro Carboni
„ 23	Munich. . .	Stadttheater
Sept. 7	Quincy, Ill., U.S.	Academy of Music
„ 26	Deadwood, Dakota, U.S.	Union Theatre
„ 26	„ „	Gem Theatre
Nov. 16	Alexandria . .	Teatro Gra
„ 19	Frankfurt-on-Main	Adelphi Theater
„ 21	Algiers . . .	Pearl Theatre
„ 30	Brussels . .	New Theatre

Date.	Place.	Name of Theatre.
Dec. 1	Toronto . .	Grand Opera House
„ 9	Stuttgart . .	Circus Herzog
„ 18	New York . .	Park Theatre
„ 26	Marenburg. .	Stadttheater
„ 30	Sherman, Texas, U.S.	Opera House

1880.

Jan. 10	Waco, Texas, U.S.	Miller's Theatre
Feb. 10	Dublin . . .	Theatre Royal
„ 15	Huddersfield .	Theatre Royal
„ 20	Rostock . .	State Theatre
„ 23	Brewster, N.Y., U.S.	Town Hall Theatre
April 2	Bradford, U.S..	Academy of Music
„ 10	Petroleum City, U.S.	Opera House
„ 27	Bellville, U.S. .	Opera House
„ 30	Temesvar . .	Franz Josef Theater
May 9	Lüttich . . .	Vauxhall Theatre
„ 14	Milton, U.S. .	Academy of Music
„ 26	Lyons . . .	Théâtre des Celestines
July 4	London. . .	Duke's Theatre
„ 8	Tyrone, U.S. .	Opera House
„ 12	Perpignan . .	Théâtre des Variétés
„ 22	Sydney . . .	Victoria Theatre
Aug. 17	Eureka, U.S. .	Opera House
„ 19	Sunderland .	Lyceum Theatre
Sept. 3	Harts Fall, N.Y., U.S.	Parker Opera House
„ 5	Altona . . .	Stadttheater
Oct. 12	Chicago . .	Emmett's Academy of Music
Dec. 2	Topeka, U.S. .	Crawford's Opera House
„ 9	Saint Louis, U.S.	Opéra Comique

1881.

Date.	Place.	Name of Theatre.
Jan. 1	St. Charles, U.S.	Miltleberger's Opera House
„ 5	Lockport, N.Y., U.S.	Hodge Opera House
„ 9	Cronstadt . .	State Theatre
„ 20	London. . .	Her Majesty's Theatre
„ 25	Marlin, Texas, U.S.	Stuart's Opera House
Feb. 3	Chicago, U.S..	Park Theatre
„ 4	Fort Mayne, U.S.	Bijou Theatre
„ 7	Brussels . .	Théâtre du Prado
„ 10	Frankfort-on-Main	Stadttheater
„ 20	Silver Cliff, U.S.	Silk's Theatre
Mar. 8	Abo, Finland .	State Theatre
„ 23	Nizza . . .	Théâtre Municipal
„ 23	Nice . . .	Opera House
„ 17	Modena, Italy .	Teatro Aliprandi
„ 29	Leadville, U.S.	Daniel's Theatre
April 5	Montpelier, France	Grand Theatre
„ 7	Athens, Greece	Phalera Theatre
„ 20	Stolp, Germany	Stadttheater
„ 20	Ramsgate . .	Vaudeville Theatre
May 2	Leeds . . .	Theatre Royal
„ 14	Spalato . . .	Bajamonte Theatre
June 8	Belfast . . .	Theatre Royal
July 5	San José, U.S..	Opera House
„ 16	St. Petersburg.	Variétés Theatre
„ 18	Madrid . . .	Circus in the Campos Eliseos
„ 19	Syracuse, N.Y., U.S.	Opera House
Aug. 5	Cadiz . . .	Grand Theatre
„ 12	Prague . . .	Ezech National Theatre
Sept. 11	London. . .	Royal Park Theatre
„ 30	Eldred, U.S. .	Jackson's Opera House
Nov. 5	Joplin, U.S. .	Opera House
Dec. 8	Vienna . . .	Ring Theater
„ 27	Leeds . . .	Stansfield Music Hall

1882.

Date.	Place.	Name of Theatre.
Jan. 16	Rotterdam . .	Stadttheater
„ 17	Pesth . . .	Kaschau Theater
„ 19	Bucharest . .	Krembser Circus
„ 27	Limerick, Ireland	Limerick Theatre
Mar. 16	Marseilles . .	Crystal Palace
„ 17	Paris . . .	Opéra Comique
„ 18	St. Petersburg .	Demidoff Theatre
„ 20	Algiers . . .	Théâtre National
April 1	Portsmouth .	Gennett's Circus
„ 1	Plymouth . .	St. James's Hall
„ 15	Bolton . . .	Temple Opera House
„ 16	Mecklenberg-Schwerin	Court Theater
„ 25	Portsmouth .	Prince's Theatre
May	Perncan . .	Citizen Club Theatre
June 1	Sheffield . .	Alhambra Music Hall
„ 18	Liverpool . .	Royal Court Theatre
„ 26	Riga . . .	State Theatre
July 4	St. Petersburg .	Arkadia Theatre
„ 6	Madrid . . .	Teatro Recreo
„ 7	Darwen, Lancashire	Theatre Royal
Aug. 14	Oldham . .	Theatre Royal
„ 20	Constantinople	Hamidee Theatre
Sept. 6	London. . .	Philharmonic Theatre
„ 11	Louvain . .	Theatre Beriof
„ 30	Orebo, Sweden	Orebo Theatre
Oct. 5	Berlin . . .	Royal Opera House
„ 7	Brighton . .	Great Concert Hall
„ 14	Riga . . .	Imperial Theatre
„ 14	St. Petersburg .	(In course of construction)
„ 30	Barcelona . .	Teatro Massini
„ 30	Glasgow . .	Royal Princess Theatre
„ 30	New York . .	Park Theatre
Nov. 15	Gros Becs-Kerek, Hungary	Stadt Theatre
„ 28	South Shields .	West End Theatre
Dec. 7	London. . .	Royal Alhambra Theatre

1883.

Date.	Place.	Name of Theatre.
Jan. 7	Moscow . .	Buff Theatre
„ 13	Berditscheff, Poland	Circus
„ 17	Vienna . . .	Ander Theatre
„ 18	Milwaukee, U.S.	Opera House
„ 22	Mitau . . .	Schrikerhofen Theater
Feb. 8	Toronto . .	Royal Opera House
„ 18	Arad, Hungary	New Theatre
„ 25	Grimsby . .	Victoria Music Hall
„ 25	New York . .	Cosmopolitan Theatre
Mar. 13	New Orleans, U.S.	Circus
April 3	Stockton - on - Tees	Star Theatre and Music Hall
„ 4	Berlin . . .	National Theatre
„ 8	Moscow . .	Salomonsky Circus
„ 8	Revel, Russia .	Revel Theatre
„ 17	St. Petersburg .	Marie Theatre
„ 25	Paris . . .	Théâtre Ambigu
„	Penza, Russia .	Summer Theatre
June 5	Chicago . .	Barnum's Circus
„ 9	Manchester .	Gaiety Theatre of Variétés
„ 11	Warsaw . .	Théâtre des Variétés
„ 24	Dervio, Italy .	Temporary Theatre
July 6	St. Paul, U.S. .	Wood's Opera House
„ 8	Warsaw . .	Summer Theatre
„ 9	Cape Town .	Theatre Royal
Aug. 11	Sunderland .	Star Music Hall
„ 28	Govi Sanaki, Japan	Theatre
„ 29	Choise, Russia	Summer Theatre
Sept. 10	Vienna	Karlsbad Theatre
„ 17	Prague . . .	German Theatre
„ 17	Kaschau, Austria	Circus
Oct. 30	Pesth . . .	Herzog Circus
Nov. 13	London . .	Raglan Music Hall
„ 14	New York . .	Standard Theatre
„ 17	Harlington .	Theatre Royal
„ 29	New York . .	Windsor Theatre
Dec. 14	New York . .	Standard Theatre

1884.

Date.	Place.	Name of Theatre.
Jan. 5	London . .	Agricultural Hall
„ 5	Cleveland, U.S.	Park Theatre
„ 18	Glasgow . .	Princess's Theatre
„ 20	London . .	Lusby's Music Hall
„ 22	Wrexham . .	Public Hall
Feb. 26	London . .	Covent Garden Theatre
May 8	Luton . . .	Ginnett's Circus
„ 16	Vienna . . .	Stadttheater
„ 24	Barrow-in-Furness	Star Music Hall
June 3	Taunton . .	Taunton Theatre
„ 4	London . .	Drury Lane Theatre
„ 30	Edinburgh . .	Theatre Royal. 4th fire
July 16	London . .	West Theatre, Albert Hall
Aug. 12	Bristol . . .	Old Theatre
Sept. 23	Rome . . .	Pietro Cossa Theatre
Oct. 19	Moscow . .	German Theatre
Nov. 1	Glasgow . .	Star Theatre
„ 1	Gratz, Austria .	Suhr Circus
„ 19	Southampton .	Gaiety Theatre of Varieties
Dec. 23	New York . .	Theatre Comique
„ 24	Leamington .	Theatre Royal
	Cholet, France	Temporary Theatre

1885.

Feb. 7	Exeter . . .	Exeter Theatre
„ 27	Washington, U.S.	National Theatre. 4th fire
Mar. 13	London . .	Her Majesty's Theatre
April 22	Szegedin, Austria	New Theatre
May 12	Chatham . .	Barnard's Music Hall
June 4	Woolwich . .	Royal Military Theatre
Dec. 6	Moscow . .	German Theatre

1886.

Date.	Place.	Name of Theatre.
Jan. 1	Detroit, U.S. .	Grand Theatre
„	Orleans, France	Orleans Theatre
„	Madrid . . .	Theatre Royal
Mar. 30	Key West, U.S.	San Carlos Theatre
April 11	Paris . . .	Prado Music Hall
May 6	Derby . . .	Grand Theatre
	Piræus, Greece	Tivoli Theatre
July 28	Tinnevelly, India	Hindoo Theatre
Oct. 18	Ravenna, Italy	Teatro dei Filodramatici
Dec. 27	Philadelphia, U.S.	Temple Theatre

1887.

Jan. 10	Göttingen . .	Stadttheater
„ 15	Bucharest . .	Sidoli Circus
„ 18	London . .	Hebrew Dramatic Club
„ 28	Swansea . .	Theatre Royal
Feb. 12	Northampton .	New Opera House & Theatre
April 6	Ringwood, Hants	Manor House Theatre
May 25	Paris . . .	Opéra Comique
June 28	Rouen . . .	Lafayette Theatre
July 4	Caceres, Spain.	Teatro Principale
„ 12	Hurley, Wisconsin, U.S.	Alcazar Theatre
Aug. 27	Stockport, Cheshire	People's Opera House
Sept. 5	Exeter . . .	Theatre Royal
„ 9	Burnley . .	Theatre Royal
„ 12	Edinburgh . .	Newsome's Circus
Nov. 2	Hamburg . .	Renz's Circus
„ 13	Cardiff . . .	Lecture Theatre
Dec. 29	London . .	Grand Theatre

1888.

Date.	Place.	Name of Theatre.
Jan. 4	Bolton . . .	Royal Theatre
„ 4	Belfast . . .	Theatre Royal
„ 5	Antwerp . .	Alhambra Theatre
„ 16	Stenbenville, Ohio, U.S.	Cain's Winter Garden Variety Theatre
„ 29	Madrid . . .	Variedades Theatre
Feb. 13	Blyth . . .	Royal Theatre
„ 23	New York . .	Union Square Theatre
March 2	Jassy . . .	National Theatre
„ 4	Cape Town .	Royal Theatre
„ 19	Grantham . .	Royal Theatre
„ 20	Oporto . . .	Baquet Theatre
April 4	Calaya, Mexico	Circus dos Toros
„ 22	Grantham . .	Royal Theatre
„ 29	Prague . . .	Menagerie
May 5	Irvine, U.S. .	Duckenfield's Theatre
June 6	New York . .	Tony Pastor's Theatre
„ 16	Bucharest . .	Menagerie
July 3	Bordeaux . .	Théâtre des Bouffes Bordelais
Oct. 6	Dundee . .	Royal Theatre
Dec. 12	Oswego, U.S. .	Academy of Music
„ 12	Chicago, U.S. .	Grand Opera House
„ 30	Kirkcaldy . .	Grand Theatre

SUMMARY.

	Destroyed.	Damaged.	Total.	Killed.	Wounded.	Total.
1876	6	14	20	330	142	472
1877	13	1	14	2	unknown	2
1878	8	15	23	97	50	147
1879	7	21	28	4	unknown	4
1880	6	17	23	2	5	7
1881	8	25	33	850	unknown	850
1882	20	15	35	2	155	157
1883	20	16	36	442	131	573
1884	9	13	22	15	150	165
1885	5	2	7	unknown	unknown	
1886	8	2	10	108	unknown	108
1887	14	3	17	238	9	247
1888	17	5	22	125	106	231
	141	149	290	2215	748	2963

In the year 1876, there were twenty casualties, including the case of Robinson's Opera House at Cincinnati, where eleven persons were killed and thirty injured; that of the Théâtre des Arts at Rouen, where eight were killed and twelve injured; one at the Chinese Theatre in San Francisco, where nineteen were killed and several others wounded; one at the Circo Theatre in Madrid, where two were killed; one at the Sacramento Theatre in California, where seven were killed and one hundred injured; and one at the Brooklyn Theatre in

America, where at least 283 persons are known to have lost their lives.

This brings up the list of deaths in 1876 to 330, and of injuries to upwards of 142, in addition to which, six theatres were totally destroyed and several others seriously damaged.

In the year 1877, there were fourteen casualties, including the case of Fox's New American Theatre at Philadelphia, where two persons were killed. Thirteen of these fires resulted in the total destruction of the buildings, and, in addition to the two deaths, several persons were injured.

In the year 1878, there were twenty-three casualties, among which the most notable were those which occurred at the Italian Circus, Calais, where a false alarm of fire caused the death of ten persons and the injury of several others; the fire at Ahmednugger, in India, where fifty persons were killed and about fifty wounded; and the Colosseum Theatre, Liverpool, where a panic, caused by a cry of "fire," resulted in the death of thirty-seven persons and injury to several others. Eight of these theatres were totally destroyed, and in one case, namely, that of the Comique Theatre at Bradford, United States, fifty adjoining buildings were either completely or partially destroyed. The number of deaths in this year, as shown above, totalled ninety-seven, and of injuries more than fifty.

In the year 1879, twenty-eight casualties are recorded. The total number of deaths was four, one having occurred at Keith's Circus, Derby, where twenty horses were also burned to death, and the remaining three at the Grand Opera House in Toronto.

In this year seven theatres were totally destroyed.

In 1880, there were twenty-three casualties, and six theatres were totally destroyed. At the Theatre Royal, Dublin, one man was killed and five persons were injured; at the Academy of Music, Bradford, United States, one person lost his life, and in this case sixteen neighbouring houses were more or less severely damaged by fire.

The fire at the Altona Theatre was caused by lightning. In the case of the Lyceum Theatre at Sunderland, the fire originated in the carpenter's shop, situated near the roof of the theatre. At the Huddersfield Theatre Royal, the fire is supposed to have broken out in the paint-shop.

In 1881, there were thirty-three casualties, resulting in about 850 deaths and a large number of injuries. At the Opera House at Nice, 150 persons are supposed to have perished, and at the Ring Theatre, Vienna, 700 lives are supposed to have been lost. In the former case, the fire was caused by an explosion of gas, followed by the sudden extinction of all lights, the building being then left

in complete darkness. In the latter case the fire occurred just before the commencement of the performance, by the fall of a hanging lamp. At the Elephant and Castle Theatre the fire was caused by the ignition of the woodwork near the starlight. In addition to the thirty-three casualties mentioned above, there were some cases of panic where the consequences were fortunately not very serious ; these cases have been omitted from the list.

In this year eight theatres were destroyed.

In 1882, there were thirty-five casualties. In twenty cases the theatres were totally destroyed. At the Alhambra Theatre, two firemen were killed, and five severely injured. No other loss of life occurred during the year. In the case of the Hamidee Theatre, Constantinople, 150 persons were injured by the falling of the building. Some thirty horses were burnt to death at the Krembser Circus at Bucharest. In the case of the Great Concert Hall at Brighton, the adjoining Hotel was completely destroyed ; and in that of the Sheffield Alhambra Music Hall, several shops were burnt down. At the Park Theatre, New York, the fire originated in the carpenter's shop.

In 1883, there were thirty-six casualties, among which were those at the Berditscheff Circus, Russian Poland, where about 300 persons perished ; the Opera House, Milwaukee, U.S., where a panic,

caused by the explosion of a calcium lamp, resulted in the death of three persons and injury to two others; the Circus at New Orleans, where two persons were killed and eight injured by a leaking lamp setting fire to the tent; the temporary theatre at Dervio, Italy, where about fifty persons were burned to death, and several others injured; the theatre at Govi Sanaki, Japan, where seventy-five people were killed, and over 100 seriously injured; and the Summer Theatre at Choise, Russia, where twelve lives are supposed to have been lost.

In this year twenty theatres were completely destroyed, and in some cases (such as that of the Windsor Theatre, New York), adjoining properties were more or less injured by fire.

The total number of deaths amounted to 442, and of injuries (known cases) to 131.

In 1884, there were twenty-two casualties, resulting in the total destruction of nine theatres. In one case, a panic caused by a false alarm of fire at the Star Theatre, Glasgow, resulted in the death of fourteen persons, and injury to several. One man died from the effects of a gas explosion at the Drury Lane Theatre. Several persons were more or less severely injured during the year, but no other deaths are recorded. In one case, at Cholet, in France, the falling of the roof of the theatre caused injury to some 150 persons.

In 1885, there were seven casualties, resulting in the total destruction of five theatres, but, so far as is known, no loss of life.

In 1886, there were ten casualties, including the Grand Theatre, Detroit, where two firemen lost their lives; the Grand Theatre at Derby, where two persons were killed; the Hindoo Theatre at Tinnevelli, where about 100 persons were killed, and many wounded; the Filodramatic Theatre at Ravenna, where one life was lost; and the Temple Theatre, Philadelphia, where three firemen were killed and two injured, bringing up the total number of deaths in this year to 108.

Eight cases resulted in the total destruction of the theatres.

In the year 1887, there were seventeen casualties, including one at the Hebrew Dramatic Club in London, at which, although there was no fire, seventeen persons were crushed to death; one at the Opéra Comique, Paris, where seventy-seven lives were lost; one at Hurley, Wisconsin, where seventeen casualties occurred, eleven persons being burned to death and six crushed and otherwise mangled; one at Exeter, where 127 lives were lost; one at Hamburg, where two persons were injured; and one at Islington, where one man was injured.

This brings the list of deaths in 1887 to 238, and of injuries to nine; in addition to which fourteen theatres were totally destroyed, and three damaged.

In two cases there was no fire, but in one of these, as already mentioned, there was a loss of seventeen lives.

In the year 1888, there were twenty-two casualties, including one at the Variety Theatre, Ohio, where one life was lost, and several endangered; the Baquet Theatre at Oporto, where over 100 lives were lost, and several persons were injured; a circus in Mexico, where eighteen persons were killed and over 100 injured; a circus at Prague, where a panic resulted in the death of six persons and injury to a large number; bringing up the total number of deaths in this year to upwards of 125, in addition to which seventeen theatres were totally destroyed.

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