# Fires and Firemen: from the Eclectic Magazine of Foreign Literature, Science and Art, Vol XXXV No. 1, May 1855 eBook

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BOOKRAGS

# Contents

# Page 1

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1:  Fires and Firemen Annual Reports of Mr. Braidwood to the Committee of the Fire Brigade [From the Quarterly Review]

Among the more salient features of the Metropolis which instantly strike the attention of the stranger are the stations of the Fire Brigade.  Whenever he happens to pass them, he finds the sentinel on duty, he sees the “red artillery” of the force; and the polished axle, the gleaming branch, and the shining chain, testify to the beautiful condition of the instrument, ready for active service at a moment’s notice.  Ensconced in the shadow of the station, the liveried watchmen look like hunters waiting for their prey—nor does the hunter move quicker to his quarry at the rustle of a leaf, than the Firemen dash for the first ruddy glow in the sky.  No sooner comes the alarm than one sees with a shudder the rush of one of these engines through the crowded streets—the tearing horses covered with foam—the heavy vehicle swerving from side to side, and the black helmeted attendants swaying to and fro.  The wonder is that horses or men ever get safely to their destination; the wonder is still greater that no one is ridden over in their furious drive.

Arrived at the place of action, the hunter’s spirit which animates the fireman and makes him attack an element as determinedly as he would a wild beast, becomes evident to the spectator.  The scene which a London fire presents can never be forgotten:  the shouts of the crowd as it opens to let the engines dart through it, the foaming head of water springing out of the ground, and spreading over the road until it becomes a broad

mirror reflecting the glowing blaze—the black, snake-like coils of the leather hose rising and falling like things of life, whilst a hundred arms work at the pump, their central heart—the applause that rings out clear above the roaring flame as the adventurous band throw the first hissing jet—cheer following cheer, as stream after stream shoots against the burning mass, now flying into the socket-holes of fire set in the black face of the house-front, now dashing with a loud shir-r against the window-frame and wall, and falling off in broken showers.  Suddenly there is a loud shrill cry and the bank of human faces is upturned to where a shrieking wretch hangs frantically to an upper window-sill. A

# Page 2

deafening shout goes forth, as the huge fire-escape comes full swing upon the scene: a moment's pause, and all is still, save the beat, beat, of the great water pulses, whilst every eye is strained towards the fluttering garments flapping against the wall. Will the ladder reach, and not dislodge those weary hands clutching so convulsively to the hot stone? Will the nimble figure gain the topmost rung ere nature fails? The blood in a thousand hearts runs cold, and then again break forth a thousand cheers to celebrate a daring rescue. Such scenes as this are of almost nightly occurrence in the Great Metropolis. A still more imposing yet dreadful sight is often exhibited in the conflagrations of those vast piles of buildings in the City filled with inflammable merchandise. Here the most powerful engines seem reduced to mere squirts; and the efforts of the adventurous Brigade men are confined to keeping the mischief within its own bounds.

When we recollect that London presents an area of 36 square miles, covered with 21,600 square acres of bricks and mortar, and numbers more than 380,000 houses; that all the riches it contains are nightly threatened in every direction by an ever-present enemy; that the secret match, the spontaneous fire, and the hand of the drunkard, are busily at work, it is evident that nothing but a force the most disciplined, and implements the most effective, can be competent to cope with so sudden and persevering a foe.

As late as twenty-two years ago there was no proper fire police to protect the Metropolis against what is commonly called the "all-devouring element." There was, it is true, a force of 300 parochial engines set on foot by Acts which were passed between the years 1768-74—Acts which are still in existence—but these engines are under the superintendence of the beadles and parish engineers, who are not the most active of men or nimble of risers. It may easily be imagined, therefore, that the machines arrived a little too late; and, when brought into service, were often found to be out of working order. Hence their employment did not supersede the private engines kept by some of the insurance offices long prior to their existence. On the contrary, owing to the increase of business which took place about this time, the different companies thought it worth their while to strengthen their former establishments, and this process continued while the parochial engines, with a few honorable exceptions, were dropping into disuse.

About the year 1833 it became evident that much was lost, both to the public and to the insurance companies, by every engine acting on its own responsibility—a folly which is the cause of such jealousy among the firemen at Boston (United States), that rival engines have been known to stop on their way to a fire to exchange shots from revolvers. It was therefore determined to incorporate the divided force, and place it under the management of one superintendent, each office contributing towards its support, according to the amount of its business. All the old established companies, with one exception,[*] shortly came into the arrangement, and Mr. Braidwood, the

master of the fire-engines of Edinburgh, being invited to take the command, organized the now celebrated *London Fire Brigade*.

# Page 3

[*] The West of England Fire-Office, which retains the command of its own engines.

At the present moment, then, the protection against fire in London consists, firstly, in the 300 and odd parish engines (two to each parish), which are paid for out of the rates. The majority of these are very inefficient, not having any persons appointed to work them who possess a competent knowledge of the service. Even women used now and then to fill the arduous post of director; and it is not long since a certain Mrs. Smith, a widow, might be seen at conflagrations, hurrying about in her pattens, directing the firemen of her engine, which belonged to the united parishes of St. Michael Royal and St. Martin Vintry, in the city. We question, indeed, if at the present moment any of the parish-engines are much better officered than in the days of widow Smith, with the exception of those of Hackney, Whitechapel, Islington, and perhaps two or three others. Secondly, there are an unknown number of private engines kept in public buildings, and large manufactories, which sometimes do good service when they arrive early at small fires in their neighborhood, although, singularly enough, when called upon to extinguish a conflagration in their own establishments, they generally “lose their heads,” as the Brigade men express it, and very many instances have occurred where even the parish-engines have arrived and set to work before the one on the premises could be brought to bear upon the fire. The cause is clear. The requisite coolness and method which every one can exercise so philosophically in other people’s misfortunes, utterly fail them when in trouble themselves. The doctor is wiser in his generation, and is never so foolish as to prescribe for himself or to attend his own family.

Thirdly, we have, in contrast to the immense rabble of Bumble engines and the Bashi-Bazouks of private establishments, the small complement of men and material of the Fire Brigade. It consists of twenty-seven large horse-engines, capable of throwing 88 gallons a minute to a height of from 50 to 70 feet, and nine smaller ones drawn by hand. To work them there are twelve engineers, seven sub-engineers, thirty-two senior firemen, thirty-nine junior firemen, and fourteen drivers, or 104 men and 31 horses. In addition to these persons, who form the main establishment, and live at the different stations, there is an extra staff of four firemen, four drivers, and eight horses. The members of this supplementary force are also lodged at the stations, as well as clothed but are only paid when their services are required, and pursue in the daytime their ordinary occupations. This not very formidable army of 104 men and 31 horses, with its reserve of eight men and eight horses, is distributed throughout the Metropolis, which is divided into four districts as follows:—On the north side of the river—1st. From the eastward to Paul’s Chain, St. Paul’s Churchyard,

# Page 4

Aldersgate-street, and Goswell-street-road; 2d. From St. Paul's, &c., to Tottenham court-road, Crown street, and St. Martin's-lane; 3d. From Tottenham-court-road, &c., westward, 4th. The entire south side of the river. At the head of each district is a foreman, who never leaves it unless acting under the superior orders of Mr. Braidwood, the superintendent or general-in-chief, whose head-quarters are in Watling-street.

In comparison with the great Continental cities such a force seems truly insignificant. Paris, which does not cover a fifth part of the ground of London, and is not much more than a third as populous, boasts 800 *sapeurs-pompiers*: we make up, however, for want of numbers by activity. Again, our lookout is admirable: the 6,000 police of the metropolis, patrolling every alley and lane throughout its length and breadth, watch for a fire as terriers watch at rat-holes, and every man is stimulated by the knowledge, that if he is the first to give notice of it at any of the stations, it is half a sovereign in his pocket. In addition to the police, there are the thousand eager eyes of the night cabmen and the houseless poor. It is not at all uncommon for a cabman to earn four or five shillings of a night by driving fast to the different stations and giving the alarm, receiving a shilling from each for the "call."

In most Continental cities a watchman takes his stand during the night on the topmost point of some high building, and gives notice by either blowing a horn, firing a gun, or ringing a bill. In Germany the quarter is indicated by holding out towards it a flag by day, and a lantern at night. It immediately suggests itself that a sentinel placed in the upper gallery of St. Paul's would have under his eye the whole Metropolis, and could make known instantly, by means of an electric wire, the position of a fire, to the head station at Watling-street, in the same manner as the Americans do in Boston. This plan is, however, open to the objection, that London is intersected by a sinuous river, which renders it difficult to tell on which bank the conflagration is raging. Nevertheless we imagine that the northern part of the town could be advantageously superintended from such a height, whilst the southern half might rest under the surveillance of one of the tall shot-towers on that bank of the Thames. The bridges themselves have long been posts of observation, from which a large portion of the river-side property is watched. Not long ago there was a pieman on Londonbridge, who eked ont a precarious existence by keeping a good look-out up and down the stream.

# Page 5

Watling-street was chosen as the headquarters of the Fire Brigade for a double reason: it is very nearly the centre of the city, being close to the far-famed London Stone, and it is in the very midst of what may be termed, speaking igneously, the most dangerous part of the metropolis—the Manchester warehouses. As the Fire Brigade is only a portion of a vast commercial operation—Fire Insurance—its actions are regulated by strictly commercial considerations. Where the largest amount of *insured* property lies, there its chief force is planted. It will, it is true, go any reasonable distance to put out a fire; but of course it pays most attention to property which its proprietors have guaranteed. The central station receives the greatest number of "calls;" but as a commander-in-chief does not turn out for a skirmish of outposts, so Mr. Braidwood keeps himself ready for affairs of a more serious nature. When the summons is at night —there are sometimes as many as half-a-dozen—the fireman on duty below apprizes the superintendent by means of a gutta percha speaking-tube, which comes up to his bedside. By the light of the ever-burning gas, he rapidly consults the "London Directory," and if the call should be to what is called "a greengrocer's street," or any of the small thoroughfares in bye-parts of the town, he leaves the matter to the foreman in whose district it is, and goes to sleep again. If, however, the fire should be in the city, or in any of the great West-End thoroughfares, he hurries off on the first engine. Five minutes is considered a fair time for an engine "to horse and away," but it is often done in three. Celerity in bringing up aid is the great essential, as the first half hour generally determines the extent to which a conflagration will proceed. Hence the rewards of thirty shillings for the first, twenty for the second, and ten shillings for the third engine that arrives, which premiums are paid by the parish. All the engines travel with as few hands as possible: the larger ones having an engineer, four firemen and a driver, and the following furniture:—

"Several lengths of scaling-ladder, each 6 1/2 feet long, all of which may be readily connected, forming in a short space of time a ladder of any required height; a canvas sheet, with 10 or 12 handles of rope round the edge of it for the purpose of a fire-escape; one 10-fathom and one 14-fathom piece of 2 1/2-inch rope; six lengths of hose, each 40 feet long, 2 branch-pipes, one 2 1/2 feet, and the other from 4 to 6 feet long, with one spare nose-pipe; two 6-feet lengths of suction-pipe, a flat rose, stand-cock, goose-neck, dam-board, boat-hook, saw, shovel, mattock, pole-axe, screw-wrench, crow-bar, portable cistern, two dog-tails, two balls of strips of sheepskin, two balls of small cord, instruments for opening the fire-plugs, and keys for turning the stop-cocks of the water-mains."

The weight of the whole, with the men, is not less than from 27 to 30 cwt., a load which, in the excitement of the ride, is carried by a couple of horses at the gallop.

# Page 6

The hands to work the pumps are always forthcoming on the spot at any hour of the night, not alone for goodwill, as every man—and there have been as many as five hundred employed at a time—receives one shilling for the first hour and sixpence for every succeeding one, together with refreshments. In France, the law empowers the firemen to seize upon the bystanders, and compel them to give their services, without fee or reward. An Englishman at Bordeaux, whilst looking on, some few years since, was forced, in spite of his remonstrances, to roll wine-casks for seven hours out of the vicinity of a conflagration. We need not say which plan answers best. A Frenchman runs away, as soon as the *sapeurs-pompiers* make their appearance upon the scene, to avoid being impressed. Still, such is the excitement that there are some gentlemen with us who pursue the occupation of firemen as amateurs; providing themselves with the regulation-dress of dark green turned up with red, and with the accoutrements of the Brigade, and working, under the orders of Mr. Braidwood, as energetically as if they were earning their daily bread.

The fascination of fires even extends to the brute creation. Who has not heard of the dog “Chance,” who first formed his acquaintance with the Brigade by following a fireman from a conflagration in Shoreditch to the central station at Watling-street? Here, after he had been petted for some little time by the men, his master came for him, and took him home; but he escaped on the first opportunity, and returned to the station. After he had been carried back for the third time, his master—like a mother whose son will go to sea—allowed him to have his own way, and for years he invariably accompanied the engine, now upon the machine, now under the horses’ legs, and always, when going up-hill, running in advance, and announcing the welcome advent of the extinguisher by his bark. At the fire he used to amuse himself with pulling burning logs of wood out of the flames with his mouth. Although he had his legs broken half a dozen times, he remained faithful to his pursuit; till at last, having received a severer hurt than usual, he was being nursed by the firemen beside the hearth, when a “call” came, and at the well-known sound of the engine turning out, the poor brute made a last effort to climb upon it, and fell back dead in the attempt. He was stuffed and preserved at the station, and was doomed, even in death, to prove the fireman’s friend: for one of the engineers having committed suicide, the Brigade determined to raffle him for the benefit of the widow, and such was his renown that he realized Â£123 10s. 9d.

# Page 7

Mr. Samuel Brown, of the Institute of Actuaries, after analyzing the returns of Mr. Braidwood, as well as the reports in the “Mechanics’ Magazine,” by Mr. Baddeley, who has devoted much attention to the subject, drew up some tables of the times of the year, and hours of the day, at which fires are most frequent. It would naturally be supposed that the winter would show a vast preponderance over the summer months; but the difference is not so great as might be expected. December and January are very prolific of fires, as in these months large public buildings are heated by flues, stoves, and boilers; but the other months share mishaps of the kind pretty equally, with the exception that the hot and dry periods of summer and autumn are marked by the most destructive class of conflagrations, owing to the greater inflammability of the materials, than in the damper portions of the year. This, from the desiccating nature of the climate, is especially the case in Canada and the United States, and, coupled with the extensive use of wood in building, has a large influence in many parts of the Continent. The following list of all the great fires which have taken place for the last 100 years will bear out our statement:—

| Month | Description of Property, &c. | Place | Value of Property Destroyed | Year |
|---|---|---|---|---|
| January | Webb’s Sugar-house | Liverpool | Â£4,600 | 1829 |
| | Lancelot’s-hey | " | 198,000 | 1833 |
| | Town-Hall and Exchange | " | 45,000 | 1795 |
| | Caxton Printing Office | " | -- | 1821 |
| | Dublin and Co. Warehouse | " | -- | 1834 |
| | Suffolk-street | " | 40,000 | 1818 |
| | Mile End | London | 200,000 | 1834 |
| | Royal Exchange | " | -- | 1838 |
| February | York Minster | York | — | 1829 |
| | 3 West India Warehouses | London | 300,000 | 1829 |
| | House of Commons | Dublin | -- | 1792 |
| | Argyle Rooms | London | -- | 1830 |
| | Camberwell Church | " | -- | 1841 |
| | Custom House | " | -- | 1814 |
| | Hop Warehouse | Southwark | -- | 1851 |
| | J.F.Pawson and Co.’s Warehouses | St. Paul’s Church Yard | 40,000 | 1853 |

| Pickford’s Wharf | London | -- | 1824
| Goree Warehouses | Liverpool | 50,000 | 1846

# Page 8

March | New Orleans | United St. | $650,000 | 1853
| 15,000 houses at Canton | China | -- | 1820
| 13,000 houses | Peru | -- | 1799
| Manchester | England | -- | 1792
| Fawcett’s Foundry | Liverpool | Â£41,000 | 1843
| Oil Street | " | 12,600 | 1844
| Apothecaries’ Hall | " | 7,000 | 1844
| Sugar House, | | |
| Harrington-street | " | 30,000 | 1830
---+---+---+---
April | 1000 Buildings | Pittsburg |$1,400,000 | 1845
| Savannah | United St. | 300,000 | 1852
| Parkshead, Bacon-street | Liverpool | Â£36,000 | 1851
| Windsor Forest | England | -- | 1785
| Margetson’s Tan-yard, | | |
| Bermondsey | London | 36,000 | 1852
| 1158 Buildings, Charleston | United St. | -- | 1838
| Horsleydown | London | -- | 1780
---+---+---+---
May | Dockhead | London | — | 1785
| Great Fire, 1749 houses | Hamburgh | -- | 1842
| 23 Steamboats at St. Louis | United St. | $600,000 | 1849
| 15,000 houses | Quebec | -- | 1845
| York Minster | York | -- | 1840
| Duke’s Warehouses | Liverpool | -- | 1843
| Okell’s Sugar-house | " | -- | 1799
| Gibraltar Row | " | -- | 1838
| Liver Mills | " | Â£8,700 | 1841
| Billingsgate | London | -- | 1809
---+---+---+---
June | Rotherhithe | London | — | 1765
| Copenhagen | Denmark | -- | 1759
| Montreal | Canada |$1,000,000 | 1852
| St. John | Newfoundland| -- | 1846
| Louisville | United St. | 100,000 | 1853
| 47 persons, Quebec Theatre | Canada | -- | 1846
| 1300 houses, Quebec | " | -- | 1845
| Gutta Percha Co., Wharf Road | London | Â£23,000 | 1853

| Humphrey's Warehouse, Southwark| " | 100,000 | 1851
---|---|---|---
July | Hindon | Wiltshire | — | 1754
| 15,000 Houses | Constantinople -- | 1756
| 12,000 Houses | Montreal | -- | 1852
| 300 Houses | Philadelphia| -- | 1850
| 300 Buildings | N. America | $160,000 | 1846

# Page 9

| 302 Stores | New York | 1,200,000 | 1846
| Apothecaries' Hall | Liverpool | -- | 1851
| Glover's Warehouses | " | Â£17,000 | 1851
| Dockyard | Portsmouth | -- | 1770
| Wapping | London | 1,000,000 | 1794
| Ratcliffe Cross | " | -- | 1794
| Varna | Turkey | -- | 1854
---|---|---|---|---
August | Dublin | Ireland | — | 1833
| Gravesend | England | 60,000 | 1847
| Walker's Oil Mill | Dover | 30,000 | 1853
| Falmouth Theatre | Falmouth | -- | 1792
| Buildings, Albany | United St. | $600,000 | 1849
| 10,000 Houses | Constantinople | -- | 1782
| Smithfield | London | Â£100,000 | 1822
| East Smithfield | " | -- | 1840
| Bankside | " | -- | 1814
| Gateshead | England | -- | 1854
---|---|---|---|---
September | 46 Buildings | New York | $500,000 | 1839
| 200 Houses, Brooklyn | " | 150,000 | 1848
| Scott, Russell, and Co., Ship | | |
| Builders, Mill Wall | London | L80,000 | 1853
| St. Paul's Church, Covent | | |
| Garden | " | -- | 1795
| 60 Houses, Rotherhithe | " | -- | 1791
| Astley's Amphitheatre | " | -- | 1794
| Mark Lane | " | 150,000 | 1850
| Covent Garden Theatre | " | -- | 1808
| Store Street and Tottenham | | |
| Court Road | " | -- | 1802
| Macfee's | Liverpool | 40,000 | 1846
| Gorees | " | 400,000 | 1802
| Formby Street | " | 380,000 | 1842
| Cowdray House | Sussex | -- | 1793
---|---|---|---|---
October | 52 Buildings | Philadelphia | $100,000 | 1839
| Grimsdell's, Builder's Yard | Spitalfields | -- | 1852

| Withwith’s Mills | Halifax | Â£35,000 | 1853
| Robert-street | N.Liverpool | 150,000 | 1838
| Lancelot’s-hey | Liverpool | 80,000 | 1854
| Memel Great Fire | Prussia | -- | 1854
| London Wall | London | 84,000 | 1849
| 20 Houses, Rotherhithe | " | -- | 1790
| Lancelot’s-hey | Liverpool | 30,000 | 1834

# Page 10

| Wapping | London | 100,000 | 1823
| Houses of Parliament | " | -- | 1834
| Pimlico | " | -- | 1834
----------+-------------------------------+------------+--
---------+-----
November | Royal Palace | Lisbon | — | 1794
| New York | United St. | -- | 1835
| 20 Houses, Shadwell | London | -- | 1796
| Aldersgate-street | " | Â£100,000 | 1783
| Cornhill | " | -- | 1765
| Liver-street | Liverpool | 6,000 | 1829
| Wright and Aspinall, | | |
| Oxford-street | London | 50,000 | 1826
| Hill’s Rice Mills | " | 5,000 | 1848
----------+-------------------------------+------------+--
---------+-----
December | Dock Yard | Portsmouth | — | 1776
| Patent Office and Post Office | Washington | -- | 1836
| 600 Warehouses | New York |$4,000,000 | 1835
| Fenwick-street | Liverpool | Â£36,000 | 1831
| Brancker’s Sugar-house | " | 34,000 | 1843
----------+-------------------------------+------------+--
---------+-----
(Extracted from the Royal Insurance Company’s Almanac, 1854.)

One reason, perhaps, why there is such a general average in the number of conflagrations throughout the year, is, that the vast majority occur in factories and workshops where fire is used in summer as well as winter. This supposition appears at first sight to be contradicted by the fact, that nearly as many fires occur on Sunday as on any other day of the week. But when it is remembered that in numerous establishments it is necessary to keep in the fires throughout that day, and as in the majority of cases a very inadequate watch is kept, it is at once apparent why there is no immunity from the scourge. Indeed, some of the most destructive fires have broken out on a Sunday night or on a Monday morning—no doubt because a large body of fire had formed before it was detected. A certain number of accidents occur in summer in private houses from persons on hot nights opening the window behind the toilet glass in their bedrooms, when the draught blows the blind against the candle. Swallows do not more certainly appear in June, than such mishaps are found reported at the sultry season.

If we watch still more narrowly the habits of fires, we find that they are active or dormant according to the time of the day. Thus, during a period of nine years, the percentage regularly increased from 1.96 at 9 o'clock A.M., the hour at which all households might be considered to be about, to 3.34 at 1 P.M., 3.55 at 5 P.M., and 8.15 per cent at 10 P.M., which is just the time at which a fire left to itself by the departure of the workmen, would have had swing enough to become visible.

# Page 11

The origin of fires is now so narrowly inquired into by the officers of the Brigade, an by means of inquests, that we have been made acquainted with a vast number of curious causes, which would never have been suspected.  From an analysis of fires which have occurred since the establishment of the Brigade, we have constructed the following Tables:—

Curtains 2,511
Candle 1,178
Flues 1,555
Stoves 494
Gas 932
Light dropped down Area 13
Lighted Tobacco falling down do. 7
Dust falling on horizontal Flue 1
Doubtful 76
Incendiarism 89
Carelessness 100
Intoxication 80
Dog 6
Cat 19
Hunting Bugs 15
Clotheshorse upset by Monkey 1
Lucifers 80
Children playing with do. 45
Rat gnawing do. 1
Jackdaw playing with do. 1
Rat gnawing gaspipe 1
Boys letting of Fireworks 14
Fireworks going off 63
Children playing with Fire 45
Spark from Fire 243
Spark from Railway 4
Smoking Tobacco 166
Smoking Ants 1
Smoking in Bed 2
Reading in do. 22
Sewing in do. 4
Sewing by Candle 1
Lime overheating 44
Waste do. 43
Cargo of Lime do. 2
Rain Slacking do. 5
High Tide 1

Explosion 6
Spontaneous Combustion 43
Heat from Sun 8
Lightning 8
Carboy of Acid bursting 2
Drying Linen 1
Shirts falling into fire 6
Lighting and Upsetting Naphtha Lamp 58
Fire from Iron Kettle 1
Sealing Letter 1
Charcoal Fire of a Suicide 1
Insanity 5
Bleaching Nuts 7
Unknown 1,323

# Page 12

Among the more common causes of fire (such as gas, candle, curtains taking fire, children playing with fire, stoves, &c.), it is remarkable how uniformly the same numbers occur under each head from year to year. General laws obtain as much in small as in great events. We are informed by the Post-Office authorities that about eight persons daily drop their letters into the post without directing themâ□□we know that there is an unvarying percentage of broken heads and limbs received into the hospitalsâ□□and here we see that a regular number of houses take fire, year by year, from the leaping out of a spark, or the dropping of a smouldering pipe of tobacco. It may indeed be a long time before another conflagration will arise from “a monkey upsetting a clotheshorse,” but we have no doubt such an accident will recur in its appointed cycle.

Although gas figures so largely as a cause of fire, it does not appear that its rapid introduction of late years into private houses has been attended with danger. There is another kind of light, however, which the insurance offices look upon with terror, especially those who make it their business to insure farm property. The assistant secretary of one of the largest fire-offices, speaking broadly, informed us that the introduction of the lucifer match *caused them an annual loss of ten thousand pounds!* In the foregoing list we see in how many ways they have given rise to fires.

Lucifers going off probably from heat 80
Children playing with lucifers 45
Rat gnawing lucifers 1
Jackdaw playing with lucifers 1

127

One hundred and twenty-seven known fires thus arise from this single cause; and no doubt many of the twenty-five fires ascribed to the agency of cats and dogs were owing to their having thrown down boxes of matches at night—which they frequently do, and which is almost certain to produce combustion. The item “rat gnawing lucifer” reminds us to give a warning against leaving about wax lucifers where there are either rats or mice, for these vermin constantly run away with them to their holes behind the inflammable canvas, and eat the wax until they reach the phosphorus, which is ignited by the friction of their teeth. Many fires are believed to have been produced by this singular circumstance. How much, again, must lucifers have contributed to swell the large class of conflagrations whose causes are unknown! Another cause of fire, which is of recent date, is the use of naphtha in lamps—a most ignitable fluid when mixed in certain proportions with common air. “A delightful novel” figures as a proximate, if not an immediate, cause of twenty-two fires. This might be expected, but what can be the meaning of a fire caused by a high tide? When we asked Mr. Braidwood the question, he answered, “Oh! we always look out for fires

# Page 13

when there is a high tide. They arise from the heating of lime upon the addition of water." Thus rain, we see, has caused four conflagrations, and simple overheating forty-four. The lime does no harm as long as it is merely in contact with wood, but if iron happens to be in juxtaposition with the two, it speedily becomes red-hot, and barges on the river have been sunk, by reason of their bolts and iron knees burning holes in their bottoms. Of the singular entry, "rat gnawing a gaspipe," the firemen state that it is common for rats to gnaw leaden service pipes, for the purpose, it is supposed, of getting at the water, and in this instance the gray rodent labored under a mistake, and let out the raw material of the opposite element. Intoxication is a fruitful cause of fires, especially in public houses and inns.

It is commonly imagined that the introduction of hot water, hot air, and steam pipes, as a means of heating buildings, cuts off one avenue of danger from fire. This is an error. Iron pipes, often heated up to 400Â°, are placed in close contact with floors and skirting-boards, supported by slight diagonal props of wood, which a much lower degree of heat will suffice to ignite. The circular rim supporting a still at the Apothecaries' Hall, which was used in the preparation of some medicament that required a temperature of 300Â°, was found not long ago to have charred a circle at least a quarter of an inch deep in the wood beneath it, in less than six months. Mr. Braidwood, in his evidence before a Committee of the House of Lords in 1846, stated that it was his belief that by long exposure to heat, not much exceeding that of boiling, water, or 212Â°, timber is brought into such a condition that it will fire without the application of a light. The time during which this process of desiccation goes on, until it ends in spontaneous combustion, is, he thinks, from eight to ten years—*so that a fire might be hatching in a man's premises during the whole of his lease without making any sign!*

Under the heads "Incendiarism," "Doubtful," and "Unknown," are included all the cases of wilful firing. The return Incendiarism is never made unless there has been a conviction, which rarely takes place, as the offices are only anxious to protect themselves against fraud, and do not like the trouble or bad odor of being prosecutors on public grounds. If the evidence of wilful firing, however, is conclusive, the insured, when he applies for his money, is significantly informed by the secretary, that unless he leaves the office, *he will hang him*. Though arson is no longer punished by death, the hint is usually taken. Now and then such flagrant offenders are met with, that the office can not avoid pursuing them with the utmost rigor of the law. Such, in 1851, was the case of a "respectable" solicitor, living in Lime Street, Watling Street, who had insured his house and furniture for a sum much larger than they were

# Page 14

worth. The means he adopted for the commission of his crime without discovery were apparently sure; but it was the very pains he took to accomplish his end which led to his detection. He had special]y made to order a deep tray of iron, in the centre of which was placed a socket, the tray he filled with naphtha, and in the socket he put a candle, the light of which was shaded by a funnel. The candle was one of the kind which he used for his gig-lamp, for he kept a gig, and was calculated to last a stated time before it reached the naphtha. He furtively deposited the whole machine in the cellar, within eight inches of the wooden floor, in a place constructed to conceal it. The attorney went out, and on coming back again found, as he expected, that his house was on fire. Unfortunately, however, for him—if it is ever a misfortune to a scoundrel to be detected—it was put out at a very ear]y stage; and the firemen, whilst in the act of extinguishing it discovered this infernal machine. The order to make it was traced to the delinquent; a female servant, irritated at the idea of his having left her in the house to be burned to death, gave evidence against him; he was tried and convicted, and is now expiating his crime at Norfolk Island. Plans for rebuilding this villain's house, and estimates of the expense, were found afterwards among his papers.

The class "Doubtful" includes all those cases in which the offices have no moral doubt that the fire has been wilful, but are not in possession of legal evidence sufficient to substantiate a charge against the offender. In most of these instances, however, the insured has *his reasons* for taking a much smaller sum than he originally demanded. Lastly, we have the "Unknown," to which 1323 cases are put down, one of the largest numbers in the entire list, though decreasing year by year. Even of these a certain percentage are supposed to be wilful. There is no denying that the crime of arson owes its origin entirely to the introduction of fire insurance; and there can be as little doubt that of late years it has been very much increased by the pernicious competition for business among the younger offices, which leads them to deal too leniently with their customers; or, in other words, to pay the money, *and ask no questions*. It is calculated that *one fire in seven which occur among the small class of shopkeepers in London is an incendiary fire*. Mr. Braidwood, whose experience is larger than that of any other person, tells us that the greatest ingenuity is sometimes exercised to deceive the officers of the insurance company as to the value of the insured stock. In one instance, when the Brigade had succeeded in extinguishing the fire, he discovered a string stretched across one of the rooms in the basement of the house, on which ringlets of shavings dipped in turpentine were tied at regular intervals. On extending his investigations he ascertained that a vast pile of what he thought were pounds of moist

# Page 15

sugar, consisted of parcels of brown paper, and that the loaves of white sugar were made of plaster of Paris. Ten to one but the “artful dodge” which some scoundrel flatters himself is peculiarly his own, has been put in practice by hundreds of others before him. For this reason, fires that are wilful generally betray themselves to the practiced eye of the Brigade. When an event of the kind is “going to happen” at home, a common circumstance is to find that the fond parent has treated the whole of his family to the theatre.

There is another class of incendiary fires which arise from a species of monomania in boys and girls. Not many years ago, the men of the Brigade were occupied for hours in putting out no less than half a dozen fires which broke out one after another in a house in West Smithfield, and it was at last discovered that they were occasioned by a youth who went about with lucifers and slily ignited every thing that would burn. He was caught in the act of firing a curtain in the very room in which a fireman was occupied in putting out a blaze. A still more extraordinary case took place in the year 1848, at Torluck House, in the Isle of Mull. On Sunday, the 11th of November, the curtains of a bed were ignited, as was supposed, by lightning; a window-blind followed; and immediately afterwards the curtains of five rooms broke out one after another into a flame, even the towels hanging up in the kitchen were burnt. The next day a bed took fire, and it being thought advisable to carry the bed-linen into the coach-house for safety, it caught fire three or four times during the process of removal. In a few days the phenomenon was renewed. The furniture, books, and every thing else of an inflammable nature, were, with much labor, taken from the mansion, and again some body-linen burst into a flame on the way. Even after these precautions had been taken, and persons had been set to watch in every part of the house, the mysterious fires continued to haunt it until the 22d of February, 1849. It was suspected from the first that they were the act of an incendiary, and upon a rigid examination of the household before the Fiscal-General and the Sheriff the mischief was traced to the daughter of the housekeeper, a young girl who was on a visit to her mother. She had effected her purpose, which was perfectly motiveless, by concealing combustibles in different parts of the house.

The most ludicrous conflagration that perhaps ever occurred was that at Mr. Phillips’s workshop, when the whole of his stock of instruments for extinguishing flame were at one fell swoop destroyed. “’Tis rare to see the engineer hoist with his own petard,” says the poet; and certainly it was a most laughable *contre-temps* to see the fire-engines arrive at the manufactory just in time to witness the fire-annihilators annihilated by the fire. A similar mishap occurred to these unfortunate implements at Paris. In juxtaposition with this case we are tempted to put

# Page 16

another, in which the attempt at extinction was followed by exactly the opposite effects. A tradesman was about to light his gas, when, finding the cock stiff, he took a candle to see what was the matter; whilst attempting to turn it the screw came out, and with it a jet of gas, which was instantly fired by the candle. The blaze igniting the shop, a passer-by seized a wooden pail and threw its contents upon the flames, which flared up immediately with tenfold power. It is scarcely necessary to state that the water was whiskey, and that the country was Old Ireland.

Spontaneous combustion is at present very little understood, though chemists have of late turned their attention to the subject. It forms, however, no inconsiderable item in the list of causes of fires. There can be no question that many of those that occur at railway-stations, and buildings, are due to the fermentation which arises among oiled rags. Over-heating of waste, which includes shoddy, sawdust, cotton, &c., is a fearful source of conflagrations. The cause of most fires which have arisen from spontaneous combustion is lost in the consequence. Cases now and then occur where the firemen have been able to detect it, as for instance at Hibernia Wharf in 1846, one of Alderman Humphreys' warehouses. It happened that a porter had swept the sawdust from the floor into a heap, upon which a broken flask of olive-oil that was placed above, dripped its contents. To these elements of combustion the sun added its power, and sixteen hours afterwards the fire broke out. Happily it was instantly extinguished; and the agents that produced it were caught, red-handed as it were, in the act. The chances are that such a particular combination of circumstances might not occur again in a thousand years. The sawdust will not be swept again into such a position under the oil, or the bottle will not break over the sawdust, or the sun will not shine in on them to complete the fatal sum. It is an important fact, however, to know that oiled sawdust, warmed by the sun, will fire in sixteen hours, as it accounts for a number of conflagrations in saw-mills, which never could be traced to any probable cause.

By means of direct experiment we are also learning something on the question of explosions. It used to be assumed that gunpowder was answerable for all such terrible effects in warehouses where no gas or steam was employed; and as policies are vitiated by the fact of its presence, unless declared, many squabbles have ensued between insurers and insured upon this head alone. At the late great fire at Gateshead, a report having spread that the awful explosion which did so much damage arose from the illicit stowage of seven tons of gunpowder in the Messrs. Sisson's warehouse, the interested insurance companies offered a reward of 100l. to elicit information. The experiments instituted, however, by Mr. Pattinson, in the presence of Captain Du Cane, of the Royal Engineers, and the coroner's jury impanelled to inquire into the matter, showed that the water from the fire-engine falling upon the mineral and chemical substances in store was sufficient to account for the result. The following were the experiments tried at Mr. Pattinson's works at Felling, about three miles from Gateshead.

# Page 17

“Mr. Pattinson first caused a metal pot to be inserted in the ground until its top was level with the surface; and having put into it 9 lbs. of nitrate of soda and 6 lbs. of sulphur, he ignited the mass; and then, heating it to the highest possible degree of which it was susceptible, he poured into it about a quart of water. The effect was an immediate explosion (accompanied by a loud clap), which would have been exceedingly perilous to any person in its immediate vicinity. The experiment was next made under different conditions. The pot into which the sulphur and nitrate of soda were put was covered over the top with a large piece of thick metal of considerable weight; and above that again were placed several large pieces of clay and earth. It was deemed necessary to try this experiment in an open field, away from any dwelling-house, and which admitted of the spectators placing themselves at a safe distance from the spot. The materials were then ignited as before; and when in the incandescent state, water was poured upon the mass down a spout. The result was but a comparatively slight explosion, and which scarcely disturbed the iron and clods placed over the mouth of the vessel. Another experiment of the kind was made with the same result. At length, a trial having been made for a third time, but with this difference that the vessel was covered over the top with another similar vessel, and that the water was poured upon the burning sulphur and nitrate of soda with greater rapidity than before, by slightly elevating the spout, the effect was to blow up the pot on the top into the air to a height of upwards of seventy feet, accompanied by a loud detonation. With this the coroner and jury became convinced that whether or not the premises in Hillgate contained gunpowder, they contained elements as certainly explosive, and perhaps far more destructive.”

We may here mention as a curious result of the Gateshead fire that several tons of lead, whilst flowing in a molten state, came in contact with a quantity of volatilized sulphur. Thus the lead became re-converted into lead-ore, or a sulphuret of lead, which as it required to be re-smelted, was thereby debased in value from some twenty-two to fifteen shillings a ton.

The great fire, again, which occurred in Liverpool in October last, was occasioned by the explosion of spirits of turpentine, which blew out, one after another, seven of the walls of the vaults underneath the warehouse, and in some cases destroyed the vaulting itself, and exposed to the flames the stores of cotton above. Surely some law is called for to prevent the juxtaposition of such inflammable materials. The turpentine is said to have been fired by a workman who snuffed the candle with his fingers, and accidentally threw the snuff down the bung-hole of one of the barrels of turpentine. The warehouses burnt were built upon Mr. Fairbairn’s new fireproof plan, which the Liverpool people introduced, some years ago, at a great expense to the town.

# Page 18

Water alone brought into sudden contact with red hot iron is capable of giving rise to a gas of the most destructive nature—witness the extraordinary explosions that are continually taking place in steam-vessels, especially in America, which mostly arise from the lurching of the vessel when waiting for passengers, causing the water to withdraw from one side of the boiler, which rapidly becomes red hot. The next lurch in an opposite direction precipitates the water upon the highly-heated surface, and thus explosive gas, in addition to the steam, is generated faster than the safety-valves can get rid of it.

A very interesting inquiry, and one of vital importance to the actuaries of fire-insurance companies, is the relative liability to fire of different classes of occupations and residences. We already know accurately the number of fires which occur yearly in every trade and kind of occupation. What we do not know, and what we want to know, is the proportion the tenements in which such trades and occupations are carried on, bear to the total number of houses in the metropolis. The last census gives us no information of this kind, and we trust the omission will be supplied the next time it is taken. According to Mr. Braidwood's returns for the last twenty-one years, the number of fires in each trade, and in private houses, has been as follows:—

Private Houses 4,638
Lodgings 1,304
Victuallers 715
Sale Shops and Offices 701
Carpenters and Workers in Wood 621
Drapers, of Woollen and Linen 372
Bakers 311
Stables 277
Cabinet Makers 233
Oil and Color men 230
Chandlers 178
Grocers 163
Tinmen, Braziers, and Smiths 158
Hooses under Repair and Building 150
Beershops 142
Coffee-shops and Chophouses 139
Brokers and Dealers in Old Clothes 134
Hatmakers 127
Lucifer-match makers l20
Wine and Spirit Merchants 118
Tailors 113
Hotels and Club-houses 107
Tobacconists 105
Eating-houses 104
Booksellers and Binders 103

Ships 102
Printers and Engravers 102
Builders 91
Houses unoccupied 89
Tallow-chandlers 87
Marine store Dealers 75
Saw-mills 67
Firework Makers 66
Warehouses 63
Chemists 62
Coachaakers 50
Warehouses (Manchester) 49
Public Buildings 46

# Page 19

If we look at the mere number of fires irrespective of the size of the industrial group upon which they committed their ravages, houses would appear to be hazardous according to the order in which we have placed them. Now, this is manifestly absurd, inasmuch as private houses stand at the head of the list, and it is well known that they are the safest from fire of all kinds of tenements. Mr. Brown, of the Society of Actuaries, who has taken the trouble to compare the number of fires in each industrial group with the number of houses devoted to it, as far as he could find any data in the Post-office Directory, gives the following average annual percentage of conflagrations, calculated on a period of fifteen years:—

Lucifer-match makers 30.00
Lodging-houses 16.51
Hatmakers 7.74
Chandlers 3.88
Drapers 2.67
Tinmen, Braziers, and Smiths 2.42
Carpenters 2.27
Cabinet Makers 2.12
Oil and Color Men 1.56
Beershops 1.31
Booksellers 1.18
Coffee-shops and Coffee-houses 1.20
Cabinet Makers 1.12
Licensed Victuallers .86
Bakers .75
Wine Merchants .61
Grocers .34

It will be seen that this estimate in a great measure inverts the order of “dangerous,” as we have ranged them in the previous table, making those which from their aggregate number seemed to be the most hazardous trades appear the least so, and *vice versÃ¢*. Thus lucifer-match makers have a bad pre-eminence; indeed, they are supposed to be subject to a conflagration every third year, while the terrible victuallers, carpenters, mercers, and bakers, at the top of the column, shrink to the bottom of the list. These conclusions nevertheless are only an approximation to the truth, since it is impossible to procure a correct return of the houses occupied by different trades. Even if a certain class of tenements is particularly liable to fire, it does not follow that it will be held to be very hazardous to the insurers. Such considerations are influenced by another question, Are the contents of houses forming the group of that nature that, in case of their taking fire, they are likely to be totally destroyed, seriously, or only slightly damaged? For instance, lodging-houses are very liable to fire, but they are very seldom burnt down or much injured. Out of 81 that suffered in 1853 not one was totally destroyed; only four were extensively affected; the very large majority, 77, were slightly

scathed from the burning of window and bed curtains, &c.  Among the trades which are too hazardous to be insured at any price are—we quote from the Tariff

# Page 20

of the “County Fire-office,”—floor cloth manufacturers, gunpowder dealers, hatters’ “stock in the stove,” lamp-black makers, lucifer-match makers, varnish-makers, and wadding-manufacturers; whilst the following are considered highly hazardous,—bone-crushers, coffee-roasters, composition-ornament makers, curriers, dyers, feather-stovers, flambeau-makers, heckling-houses, hemp and flax dressers, ivory-black makers, japanners and japan-makers, laboratory-chemists, patent japan-leather manufacturers, lint-mills, rough-fat melters, musical-instrument makers, oil and color men, leather-dressers, oiled silk and linen makers, oil of vitriol manufacturers, pitch-makers, rag-dealers, resin-dealers, saw-mills, seed-crushers, ship-biscuit bakers, soap-makers, spermaceti and wax refiners, sugar-refiners, tar dealers and boilers, thatched houses in towns, and turpentine-makers.

It is a notable fact that the city of London, which is perhaps the most densely inhabited spot the world has ever seen, has long been exempt from conflagrations involving a considerable number of houses. “The devouring element,” it is true, has made many meals from time to time of huge warehouses and public buildings; but since the great fire of 1666 it has ceased to gorge upon whole quarters of the town. We have never had, since that memorable occasion, to record the destruction of a thousand houses at a time, a matter of frequent occurrence in the United States and Canada—indeed in all parts of Continental Europe. The fires which have proved fatal to large plots of buildings in the metropolis, have in every instance taken place without the sound of Bow bells. A comparison between the number of fires which occurred between the years 1838 and 1843, in 20,000 houses situated on either side of the Thames, shows at once the superior safety of its northern bank, the annual average of fires on the latter being only 20 against 36 on the southern side. For this exemption we have to thank the great disaster, if we might so term what has turned out a blessing. At one fell swoop it cleared the city, and swept away for ever the dangerous congregation of wooden buildings and narrow streets which were always affording material for the flame.

The means to be adopted to prevent the flames spreading, resolve themselves into taking care not to open doors or windows, which create a draught. The same rule should be observed by those outside; no door or glass should be smashed in before the means are at hand to put out the fire.

*Directions for aiding persons to escape from premises on fire.*

1. Be careful to acquaint yourself with the best means of exit from the house both at the top and bottom.

2. On the first alarm reflect before you act. If in bed at the time wrap yourself in a blanket, or bedside carpet; open no more doors

or windows than are absolutely necessary, and shut every door after you.

# Page 21

3. There is always from eight to twelve inches of pure air close to the ground: if you can not therefore walk upright through the smoke, drop on your hands and knees, and thus progress. A wetted silk handkerchief, a piece of flannel, or a worsted stocking drawn over the face, permits breathing, and, to a great extent, excludes the smoke.

4. If you can neither make your way upwards nor downwards, get into a front room: if there is a family, see that they are all collected here, and keep the door closed as much as possible, for remember that smoke always follows a draught, and fire always rushes after smoke.

5. On no account throw yourself, or allow others to throw themselves, from the window. If no assistance is at hand, and you are in extremity, tie the sheets together, and, having fastened one end to some heavy piece of furniture, let down the women and children one by one, by tying the end of the line of sheets round the waist and lowering them through the window that is over the door, rather than through one that is over the area. You can easily let yourself down when the helpless are saved.

6. If a woman's clothes should catch fire, let her instantly roll herself over and over on the ground; if a man be present, let him throw her down and do the like, and then wrap her in a rug, coat, or the first *woollen* thing that is at hand.

7. Bystanders, the instant they see a fire, should run for the fire-escape, or to the police station if that is nearer, where a "jumping-sheet" is always to be found.

Dancers, and those that are accustomed to wear light muslins and other inflammable articles of clothing, when they are likely to come in contact with the gas, would do well to remember, that by steeping them in a solution of alum they would not be liable to catch fire. If the rule were enforced at theatres, we might avoid any possible recurrence of such a catastrophe as happened at Drury Lane in 1844, when poor Clara Webster was so burnt before the eyes of the audience, that she died in a few days.