RAILWAY DANGERS;

AND

HOW TO AVOID THEM.

BY WILLIAM PETERS.

EFFINGHAM WILSON, ROYAL EXCHANGE.

1853.

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HOW TO AVOID THEM.

Losses of life in numbers, and dreadful fractures and mutilations occur too often. This may be the veriest truism, but it is nevertheless one which cannot be too often repeated, until a remedy is found for the evil. They happen with sufficient frequency to shew, either that there is gross neglect, or that systems of precaution are ill understood or lamentably defective. The subject is too serious to be neglected any longer; for, amidst all this, there seems to have been, on the part of the Railway Authorities, an unaccountable confidence in the measures which they have adopted for the safety of travellers; although those very means have so repeatedly been proved ineffectual to prevent these frightful collisions.—A man is sent back from an obstructing train with a flag, or a light and fog-signals; and at Stations other signals are made; yet in the face of all these warnings, and of evidence on evidence of their insufficiency, train runs on train with fatal consequences to numbers, and an extent of personal injury, which does not reach the Coroner and his Jury, and which the public believe to be greatly beyond that recorded in the reports which appear in the newspapers. And not only do we hear of calamities arising out of unseen or neglected signals, but heavy trains continue to be sent forth with engines of inadequate power, and shunting still goes on in the face of an express, as at Hornsey, without warning, till too late; or a "pick up" is ready to rush into a disabled train in the dusk of the evening with just sufficient light left for the Guard of the latter to exercise a discretion which he ought not to have, and neglect to place on the line the fog-signals with which he is provided.

Nevertheless, I am not disposed to join in the outcry, that there is on the part of the Railway Directors, Station Masters, Guards, Drivers, and Stokers, and all classes of Officers, that disregard of life and limb which the sarcasm of the daily press attributes to them. Directors enjoy no immunity from collisions; and heavy loss of property, for which they are admitted to have some concern, always attends these disasters. Albeit the character of the drivers may, from habit, in the nature of the Englishman, grow inconsiderate and rash, it does not necessarily degenerate into utter recklessness of their own lives as well as those of the travellers. They *must* speed on their way not only with the consciousness, as they proceed, that they are wielding a fearful engine of destruction, but also, under the sad teaching of experience, that theirs is a post of imminent danger as well as responsibility. These men collectively and individually have been most unfairly and ungenerously run down.

The leader of a forlorn hope feels his responsibility not to shrink from his post; it is one of honor; and duty to his country is his encouragement. The captain of a sinking vessel holds on to the last; his post is a post of danger, but it is a post of honor too. His energies, in the presence of those dependent on him for their lives, regulate the movements of the crew, and direct their efforts for the rescue of all; and he may when he has seen all safe, escape. But the poor engine-driver, if an obstacle is thrown in his way and a signal is forgotten or insufficient, has nothing before him but disgrace, and next to certain death. The soldier loses his life or gains his prize, and the distinction for which he serves. The sailor may survive and receive an honorable acknowledgment of his coolness and self-possession. Though the loss of his ship may ruin him, he may escape without the losses of others being justly or unjustly attributed to his negligence or want of skill; for the murmur of the dissatisfied may be quelled and neutralized by admiration of his courageous bearing at the hour of peril. The engine driver holds a post of danger as imminent as that of the soldier, or the sailor; but he is out of the pale of encouragement or consolation; and the crisis of calamity, should

he escape with his life, is one of unmitigated woe. If my readers need an instance of the brightest kind, where life and limb were mercifully spared, it contains everything else to distress, nothing to cheer. I appeal to that of the engine driver at Straffan. His exclamation to Captain Collis was not the expression of fear for self, reckless of the awful shrieks which had just rung in his ears, nor of heartless indifference to the appalling scenes of death and mutilation which he had to encounter. I appeal to any man of any feeling who read that exclamation in reply to the enquiry of Captain Collis if he was hurt, "No! but I shall never get over it;" whether it did not satisfy him, whatever the literal meaning of those words, that personal consequences were the last consequences in his mind; and whether it is not rather the expression of a man of full heart and a kindly disposition deploring the misery around him of which he had, it is true, been the cause—but the cause through the inefficiency of a system to which he himself had just narrowly escaped becoming the victim.

The Railway Authorities are lauded to satiety for their arrangements, yet the only caution which this man had of the danger which he was approaching, was a dull red light; and it is remarkable, that, although used on these occasions of desperate danger, the colour is one of *distinction when seen*, not that of *attraction to a watchful eye*. Nay, it is curious that it is the very colour which is found most convenient to obstruct radiation, and obscure the splendour of a mid-day sun, at an observation for latitude within the tropics. What an absurdity it would be, to attempt to light up the platform with these red lanterns! The signal lantern again, is not, like the large red lights, the tail lights of a train, fixed and steady; but a smaller hand-light shaken about as the guard moves onwards: and the natural dullness of the dullest of all Railway signals, may, as likely as not, be rendered dim, almost to obscurity itself—and who shall say this was not the case at Straffan—by wiping it with a dirty, greasy cloth. Yet on such a signal exclusively, after the experience of years, and of collision after collision, from the beginning to Frodsham and Clay Cross, and from Clay Cross to Hornsey and Straffan, depended the safety of person and property, at that fatal catastrophe.

Fifteen lives have been lost, others are still in danger; and the "*Times*" has congratulated the country and the coroner's jury because there has been found a verdict of manslaughter against the engine-driver and stoker. These men might have had the startling fog-signal in time to draw up, with some few yards to spare, if the break had been in proper order and a fog-signal had been used, *but it was not;* and three large red lights, which they had a right to expect and most likely were looking for whilst the smaller escaped notice, were not in their places at the tail of the obstructing train. The presence of those three lights, in line, would have at once told the danger. Everything was against, nothing for, these men except a dull red light. Yet their committal is satisfactory to the "*Times,*" and that the public go too often with the "*Times,*" is another truism. The "*Times*" has no commiseration for the engine-driver and stoker; it is an ubiquitous engine, with a hundred locomotive crushing power; its condemnation flies far and wide, and the verdict of a jury which can condemn to transportation, or hard labor in imprisonment, may be influenced by its acknowledgments to the jury which has turned them over to trial.

It is earnestly to be hoped that the experience of the Straffan Collision will not be lost; that its incidents, and those of other collisions will be sought out, and investigated; and that any circumstances of importance to the safety of life, limb, and property developed by them severally, will be collated, compared, and contrasted each with other, with a view to deduce from them schemes of prevention, or some precautions against such fatal and serious results, if collisions cannot be altogether prevented. To lend my humble efforts in the cause of public safety, is the object of this pamphlet, in the anxious desire to see the subject of Railway dangers and hindrances, not only fully investigated, but amply discussed, with the view of establishing some distinct and judiciously framed general rules for such occasions. It were well that this should be done by men duly appointed, with power to command the production of the necessary information, take evidence, and obtain the opinions of persons of experience, and thence deduce some system for general observance.

As regards the Passengers it may be urged that, "self-pre-

servation is the first law of nature," and I cannot for a moment imagine that the result of such an investigation would be a direction to "sit still and be crushed;" but I am, nevertheless, far, very far from considering, as some have supposed, in consequence of a letter which appeared with my signature in the "*Daily News*," of the 10th October, 1853, that at every stoppage from whatever cause, the Passengers should be urged, or even permitted in a body, to quit the train and run wild and uncontrolled in a deep cutting or a tunnel. When the correspondent of the "*Times*" declared his determination, that nothing but a stronger man than himself should keep him in his seat when a Train was at a stand,—and in that I reciprocate,—I conclude that he contemplated *having*, in the exercise of his discretion, *the desire to quit it.* An ill-discriminating, and indiscreet exercise of that desire might, however, instead of diminishing the common danger, tend only to increase it; and the safety of the many is the duty of those exercising authority and responsibility. But because delays under such circumstances may, nay must, continually happen; and even though such delays be more frequent than hindrances where danger is not either remote, or merely conjectural, it by no means follows that it is necessary or expedient, that any rule should be absolute, or after experience such as we have been contemplating, the discretion of the Railway Authorities in making rules unlimited. That the time occupied on the journey is a material element in all questions as to safety in Railway travelling, is certain; and that any great delay in getting together a considerable number of Passengers would occasionally be extremely mischievous, I readily admit. But, on the other hand, every one knows that Passengers may be told to keep their seats, because they are liable to talk about a hindrance, on an occasion when, in their discretion, they find it needful to quit their places. There is a broad line and palpable distinction, between expected and merely casual obstruction. Apart from the attendant danger, which never would be admitted, but "too often" occurs, every stoppage is a Railway inconvenience, as well as an inconvenience to travellers;—the more it is talked of, the greater the stir it creates, the greater the inconvenience; and

the news of a hindrance may spread the wider when Passengers roam about, than when they are content to sit still and grumble. Rules and order might be substituted for confusion, without leaving to either the authorities or the travellers an unreasonable discretion. Was there any rule at all at Straffan? If there was, which obeyed it, Mr. Jelly, who was cut to pieces, or Captain Collis, when he leaped out of danger as the crash came? Would a captain of a sinking ship expect obedience to an order to get into a crazy boat, when the bung could not be found, if the Passenger had constructed a raft for himself, or preferred lashing himself to a spar?

Let it be granted, that, in cases when the system in operation would keep passengers in their seats but their common sense disposes them rather to risk being "left behind," than wait in their places to be killed and cut to pieces, a scene of some confusion might ensue. Let us, in order to judge the case fairly, recur to the disaster at Straffan, and look to facts and circumstances which have actually taken place this very month of October, 1853. Every known precaution had been taken, no precautionist was to blame; but all failed, partly through the negligence of the guard, if the fog-signals would have sufficed, and partly owing to the engine driver discovering the danger too late to stop a heavy train with, possibly, an inefficient break. During the interval between the stoppage and the crash, the "discretion" of the passengers was at work. Some ladies were anxious to get out, but were prevented by the fear of being "left behind." To that fear may be attributed the fatal and disastrous catastrophe.

The real state of things should, on every occasion of stoppage, and as soon as possible, be communicated, without reserve, shuffle, or evasion; not necessarily—except in cases of imminent danger from a train in sight bearing down at speed—with abruptness, so as to cause alarm; but the guard should tell "the truth, the whole truth, and nothing but the truth," to a few who would be found in every train ready to encourage the timid and assist the invalid. It would soon spread from end to end, with little of confusion or dismay. Had one minute been spent in explanation by the guard at Straffan to those who would

have gathered around him, and been ready to assist—had intimation been given, generally, that a piston was broken, and time required to mend it; and that before it could be set in order, an expected train might run on them, whilst a few feet would place them clear of all danger, or a walk to the station find them shelter, with an assurance that there should be due notice, and none left behind—no lives would have been sacrificed—no limbs dissevered—no bones crushed—no hearts rent with the appalling scene at which survivors had to assist, nor with the mere relation of the misery, pain, and anguish, which those maimed, disfigured, and bereft numbers had to undergo. If all had gone right, and no collision had happened, a minute or two might have been lost in collecting stragglers together; or rather, whilst the passengers took their seats—for there is no necessity to wait till an injury to the machinery is completely repaired, before they are collected. Some few, nay many, might, in the supposed case have grumbled at being disturbed from their slumbers, and urged to walk half-a-mile through a beating, drizzling rain; and it is reasonable to fear that the less hardy might have suffered from exposure to the weather; but contrast every possible real or imaginary grievance or inconvenience to the whole, any confusion that *might have happened* from the travellers getting out, with the wreck of human beings which *did ensue* from their remaining in the train—nay, even with one limb broken, or one concussion felt, and left to tell its future tale; and every objection of those who would argue for an order to "keep seats" and await the consequences of a casual obstruction, an unanticipated hindrance,—let it occur, I am bold enough to say, *wherever it may*,—is scattered to the winds.

In the Frodsham case, to which I have referred, there were three trains in collision at the same time: it mercifully happened that the second train overtook the first at a minimum of progress; for it is in evidence that it "stuck fast for want of steam, there being so little that the Engine Driver could not raise a whistle." The consequence of the first collision was only that a few persons in the first train were bruised: but the catastrophe had not arrived; in three or four minutes the third

train came into the other two, "producing a fearful crash." To one of the trains, although it had to pass through a long dark tunnel, no tail lights were attached "because it was not a night train." At Straffan, there were no tail-lights, because it was only dusk, half an hour after sunset, though foggy with a drizzling rain. Here is evidence of a systematic absence of precaution, in cases not exactly identical, but closely analogous; the precaution of tail-lights neglected (as well as others) in 1851; and the neglect repeated in 1853. Tail-lights may not have been uniformly a protection by night; but at all events they are thought to be so; and as a train may stop in a dark tunnel; or, started towards the fall of daylight, may not reach its destination, owing to some unforseen hindrance till dusk, or pitch-darkness; surely the experience of three trains in collision in a tunnel at Frodsham, might have been a warning against the recurrence of such neglect at Straffan. The parties whether they had or had not, *thought they had* a discretion in this matter, and accordingly exercised it with fatal want of wisdom.

There is, therefore, no security whatever for the public, that warnings carry weight with them to insure precaution, or lead in a moderate time, to the development of new plans where those in use are insufficient, either in principle or in practice; and the practice of sending down a Government Commissioner to investigate what has been, after what has been has been removed, seems to be very like shutting the stable door when the steed is stolen. The Government might take steps to establish rules on wise principles, for the guidance of the Railway Companies, and of travellers, and such a course would be better by far than leaving even the latter, to exercise a discretion, which we are told was given to them at Straffan—a discretion *to be used under the fear of being left behind.* The delay of mending the piston was necessary; before it could be set in order a train was due, and *must come,* if signals which had often failed before, failed then. There was, however, much against the *probability* of a collision; for fifteen or twenty minutes, elapsed before the crash; and there was full time for the guard with the signals to have stopped the cattle train. Confidence of safety, amongst those who, in their discretion,

were disposed to trust to Railway Rules, and Railway Signals, was not necessarily lost; but, peradventure, even encouraged by the delay,—unless accompanied by the reflection with which we started, that these things "OCCUR TOO OFTEN." These few minutes passed, the train appeared, was found to be at speed, and the alarm was sounded too late to exercise a wise discretion; and bodies "cut in two at the waist;" "a body which could hardly be recognized, his head being torn and smashed off, his legs both cut off, his body torn up, and his clothes torn all off him;" another body with the "head cut off and gone—no trace of it—both legs cut off from the thighs down;"—the dead, the dying, the mutilated—the shrieks and groans of the suffering—nay, even the lament of the Engine-Driver, call loudly on us to repeat, in the ears of responsible men, the deplorable fact, that these things "OCCUR TOO OFTEN." My readers will, I hope, pardon me if I recur so constantly, and apply, in more ways than one, the heart-rending spectacle at Straffan. In consulting a barrister of eminence, it once occurred to me to point out that we had lighted on a repetition in the case. "You need not mind that," he replied, "I know your remark is in accordance with a general opinion; but it is a great mistake—if you have a strong point, do not be afraid of repeating it—do not let it drop unheeded for the want of repetition." When I call attention to four memorable instances as evidences of defective system, I feel that they must continually be held up as emphatic warnings, and that something *must be done* to put an end to the present state of things; or else, as before Frodsham and Clay Cross, in 1851, and as since Frodsham and Clay Cross, up to Hornsey and Straffan, in 1853, so from Straffan, henceforth, disaster will follow on disaster till some other calamity of like or greater magnitude shall once more fix public attention, and stimulate this nation of travellers to call more loudly still for rules better devised—simpler, yet perhaps for that very reason more difficult to frame—but still such as shall commend themselves to the ready understanding and intelligence of those whose discretion or whose conduct they are to guide; not such as their common sense tells them it is suicidal to obey.

Collisions of appalling magnitude have not come singly, as if to make the warning more emphatic. Clay Cross was about twenty days after Frodsham, and within five weeks of Hornsey came Straffan.

This pamphlet is more desultory than I could wish; but to collect and arrange systematically the causes of danger, and the suggestions, whether of experience or of speculation, as to the best means of avoiding them, as well as remedying many of the inconveniences and minor vexations and annoyances, which attend a hindrance unaccompanied with danger, which I had thought to make a part of my subject, would, I find, enlarge this paper beyond the limits to which I am necessarily restricted, and could not be done without losing the painful advantage to be derived from striking while the iron's hot, on the horrors of Straffan: surpassing all previous disasters. Indeed I never contemplated such a task as a cursory inspection of the accounts of Railway calamities since 1849 shews to be necessary for the public safety; well worthy of the interference of the Government and of the energies of men of the highest scale of talent, the quickest discernment, and the most enlarged experience; whose abilities could not be better directed than to a public duty of such transcendant importance and imperious, overwhelming necessity. This suggestion I believe to be one of the first moment, in devising plans for avoiding Railway dangers.

There are some Railway Dangers from which we must disconnect the latter clause of my Title—dangers which, as it were, cannot but happen now and then—dangers, of which the obvious remedy is in the hands of the practical men upon

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Note.—In curious corroboration that Clay Cross should be a watchword for precaution, within a fortnight of the Straffan collision, "Clay Cross" *re-appears* in the catalogue of disasters. In defiance of all signals, and, it is stated, to the great peril of the Station-Master, a Driver, *with his back to the danger a-head*, ran his train into another. Neither, mercifully, was a passenger train. A Fog-Signal might have saved this property. The engineer and stoker decamped. A suggestion to use "Fog-Signals" in bright daylight might have seemed, or may seem ridiculous and absurd, but I am content that it should stand by the side of an order to "keep your seats" and await the consequences of a casual detention *even in a tunnel.*

whom we must exclusively depend. If a piston-rod breaks, it does not become those who know nothing of machinery to say that piston-rods should be made stronger; or if the tyer of a wheel give way, and do mischief, that it ought to have been of harder or of softer metal. I deem it, therefore, away from the scope of my subject to dwell on dangers which arise from the necessary imperfections of roadways or machinery, arising out of weather or wear and tear—land-slips either of embankments or in cuttings, wilful obstructions, trains running off the line, negligence in turning the switches, with many others, the remedy of which depends on the engineer or the mechanic, or an effective supervision of the surveyor, and the general care and efficiency of the establishment. It is rather to means of prevention or precaution, such as are in the hands of the Government or the Directors, or at the command of the travellers themselves, that our attention must be turned.

Next to the authoritative interference of the Government for the public safety in the manner pointed out, I look to quitting the train as the best precaution against the dangers of collision, and venture, after much discussion with competent persons, still to hold to the opinion, that, as a general rule, reason and past experience indicate, that, when it is known that the train cannot move on for several minutes, and the stoppage arises from some unforeseen cause, such as the breaking of a piston, or other part of the machinery, it should be the duty of the guard to caution the travellers; assure them that they shall not be "left behind;" and urge on them the necessity of placing a few feet between themselves and danger; and this not without order or regularity, but on some known and established principles, simple if possible, as the "rule of the road"—to be developed as I have said by patient investigation, not left to companies with common or conflicting interests and advisers.

A correspondent of the "*Daily News*," "One conversant in Railways," in reply to my letter to the Editor of that paper of the 8th October, "joins issue" with me when we get into a tunnel. His arguments which I give in his own words, in sequence to the letter which drew forth his objections, comprehend most of the difficulties which I have had to encounter

in an argument *in a tunnel*, which I was afforded an opportunity of measuring; it was the small tunnel near the Brighton Terminus, but I am told that all are nearly of the same guage.

I do not attribute to "One conversant in Railways," any wilful unfairness of argument; and am free to acknowledge that there are many who tremble at the idea of turning loose in a tunnel a heavy train-load of excursionists. Still I must caution my readers that from oversight, not intention, the point where we "join issue" is not fully understood, or at all events correctly stated. We must not start with supposing that no collision is to ensue, but the very reverse: if we are to talk of the danger of confusion, we must contrast the confusion we or they expect from *getting out* of the carriages with that attendant on the crash and its results—the utter confusion to those *pent in.*

If no collision occurs, the difficulty of keeping the multitude together, and from roaming into danger, may be a subject of satisfactory contrast with the smoothness, in practice, of moving on the disabled train without the trouble of collecting all, or a few stragglers, at risk of leaving some behind; but with the experience of *three trains in a heap*, in Frodsham Tunnel, I may reasonably rejoin that my antagonist disjoints the argument. Delay, and inconvenience, with supposed insecurity, are to be contrasted with *absolute dangers:* the just way to meet the case and "join issue" is on the relative dangers of this course or that, *when a collision occurs;* in other words, whether the task is easier and more safe, to endeavor to keep the excursionists out of danger and take them back to their places, or forward the train to them when repaired; or to pick out of a mass of shattered carriages the dead and mangled bodies of a very considerable number or proportion of them; the one, after forcing the argument to the utmost, the *possible result* of their vacating, the other, without straining the argument at all, the *next to certain result* of keeping them in their places.

The following is the letter to the "*Daily News*," with the reply of "One conversant with Railways," above referred to.

TO THE EDITOR OF THE "DAILY NEWS."

SIR,—Some time ago a correspondent of the *Times*—who declared his own wise determination that nothing but a stronger man than himself should keep him in a railway carriage when a train was brought to a stand—urged on all travellers the simple precaution of placing a few feet between themselves and danger, as Captain Collis and two or three more were mercifully led to do at Straffan.

I had previously ineffectually invited the *Times* to call public attention to the necessity for some rules to supersede the arbitrary calls of the guards on these occasions, "Gentlemen, keep your places," which should rather be, "Gentlemen, the train may be at a stand for two minutes or more; your wisest course is to step out; you will be quite safe a few yards from the rail, and sufficient notice will be given to prevent your being left behind if you do not stray much farther." Such a caution, with the near door open and the off door locked, would be an immediate preventive of such calamities as that which happened near Straffan, to all who prefer any inconvenience of weather to the danger of keeping their seats.

Even in a tunnel I believe that this would be the wisest course, if the passengers were cautioned by the guard at the time, and by printed direction in the carriages, to get out, keep their left hands in contact with the wall, and go on ahead of their own engine, till they could place themselves out of all possibility of mischief beyond the tunnel or deep cutting. I allude to this inconvenient position for such an occurrence just now, because I remember the Clay Cross* collisions, and heard it argued, at that time, that an express train running into another would push the whole "a quarter of a mile along the line," and expose those ahead of the engine, when the crash came, to greater danger even than if they remained in the carriages. The experience of the Straffan collision, however, shows that this risk, certainly not more imminent, would have been confined in that instance, had it happened in a tunnel, to those who had not reached beyond the second carriage from the engine, and that those who had passed the engine before it was disengaged at the crash, would have escaped unhurt, unless they neglected the direction to keep close to the wall.

NOTE. * I should have written "Frodsham," which occurred about three weeks before "Clay Cross."—W. P.

In the abstract I am averse to the practice of locking either door; but this objection should perhaps give way, in consideration of the alarm which often occurs to the timid at every hindrance or stoppage; for the danger might be immediate in the face of an express train, and the probability is that such persons, especially if hurried, would get out at the door next them, which might be the wrong one, and expose themselves to be run over by a train on the off line.

I write with five years' experience of a line where I believe hindrances are at a *minimum*. When they have occurred, the practice of my fellow-travellers accords, as often as not, with the proposed rule, though sometimes "against orders," and at the risk, because the guard's remonstrance is not attended to, of being "left behind;" fear of which prevailed, and may have been the main cause of much of the loss of life and limb at Straffan.

I hope never again to hear run down the line the order to passengers to "keep their places." I trust all will now consider this practice, certainly in the open country, as proved to be absurd, and that you, Mr. Editor, will concur with me in thinking, and will recommend that rules, not hastily drawn up, but put together by persons of experience and judgment, connected and unconnected with the Railways, should be authoritatively promulgated, and substituted for the absurdity of insisting on people waiting for a catastrophe which a second or two and a step or two would certainly avoid.—I am, &c..

October, 8. W. PETERS.

TO THE EDITOR OF THE "DAILY NEWS."

Sir,—In the "*Daily News*" of yesterday appeared a letter signed "W. Peters," commenting upon what he deems to be an absurd principle of passengers keeping their places in railway carriages in the case of accidents.

After recommending the adoption of passengers getting out of the carriages on the train being brought to an involuntary stand (on an ordinary line,) he says that even in a tunnel he believes that this would be the wisest course for the passengers to pursue. At this point I beg to join issue with Mr. Peters. On a Railway where there are but few people travelling, and which is free from tunnels and deep cuttings; on such a line I presume he must have had his experience. It will be admitted that in such instances as the recent painful affair at Straffan, it would be the best and only safe method to adopt, but I would ask your inexperienced correspondent how this system would act

in the event of a train of about twenty carriages containing a proportionate number of passengers in a long and darksome tunnel—how he could arrange those people so that they might be free from danger? I think he would find it a most difficult, if not an impossibility, even if it were light in the place, to prevail upon them to walk steadily along the side of the line, "keeping their left hand in contact with the wall." Would not the knowledge of there being an expectation of a train approaching be sufficient to shake even the strongest-minded of these people, and cause them to miss their way in the gloomy and dangerous vault? How much more the timid and helpless? I question whether Mr. Peters himself would be found to possess courage enough to carry out such a project on an experimental occasion. I remember, and was witness to, an occurrence of an excursion train, consisting of more than twenty carriages, containing upwards of five hundred passengers, having come to a dead stand in the middle of a tunnel like the one referred to. It was dark before we entered, but we found it much darker within. With the powerful, but perfectly unavailable, exertions the engine had made to force her way up the incline, we were completely enveloped in steam. I and some others with difficulty proceeded to the rear of the train, when we ascertained that the guard had gone with his lamp down the line to warn any other train from approaching, but I would not have recommended the most cautious and intelligent of those passengers to have stepped out of the carriages in such a place. The train had to be divided, one part of which was taken and placed in a siding, and remained there till the other part was dragged out, when the train resumed her journey in safety.

Now, I am at a loss to conceive what effect any caution from the guard would have had in such a case, providing he could have been heard, and if such caution could have been practicably administered: and also whether printed directions would have proved available, and if an attempt to walk one by one on the side of the dark line could have been done without injury, and the result of such a proceeding on the minds of the actors; and supposing a train had come up in a similar way to the cattle train at Straffan, whether it would have been to their advantage or otherwise. And if they had had the good fortune to have arrived at a point beyond the place where the disabled train might have been sent, it is questionable whether good would have ensued. Fear must have certainly come upon them, and who can tell that they would have remained in the right track?

I have often seen in ordinary cases, that is on a level line with broad

daylight, the dangers consequent upon people being too ready to quit their seats on the slightest alarm, and the difficulty of managing them in those moments of fear; and how soon a crowd of people lose their presence of mind and fly into the greatest danger—that I am of opinion that if this was generally recommended it would too often be adopted, especially by the timid; and a train would no sooner be stopped but the passengers would evacuate it, and in many cases cause serious delay when it might otherwise have been avoided. I am well aware that too much apathy has often been displayed by drivers and guards, when a stoppage has taken place, in refusing to acknowledge to the passengers the cause of such delay, and in some instances, when there has existed a doubt in their minds, as to the true cause of their position, they have silently attempted to find it out in order that no alarm might be created, rather than inform those in the train of the exact state of things, and the words, "Keep your places," may often have been used when he who said them had no real and just grounds for such a caution. I deny the propriety of passengers being kept in the dark. The only safe plan is, when there is a doubt as to the real cause of the delay, and there is a likelihood of the train remaining a short time before it is able to proceed, to communicate with the passengers and calmly advise them of the best steps to be taken; but as to printed directions being affixed in the carriages, they would not only do no good, but much harm. They would cause fear and confusion on the most trivial cases. Discretion and judgment will always be the best guides on such occasions; and so long as men wilfully refuse to act in accordance with them, so long shall we have at times to witness such painful spectacles as Railway accidents presented to us.—I am, sir, &c.,

ONE CONVERSANT WITH RAILWAYS.

October 11.

My readers have now the proposition, and the reply. After an attentive re-perusal of the latter, and before I proceed to describe a tunnel and rejoin, it is necessary to observe that I shall endeavor, as I proceed, to state as distinctly as I can, every objection which has been urged by others as well as the Correspondent of the "*Daily News*" to my suggestions, and I have the opportunity of argument with those who have the greatest experience in these matters.

But let me first correct myself. When I suggested that the passengers should get out on the near side—the doors on the

off side being locked—I had not measured a tunnel; and expected to find more space by fifteen or twenty inches than there is, between the train and the wall. There is space enough, it will be seen when the tunnel is described, to move onwards in tolerable order, in the direction of the disabled engine, *assisted by the projecting steps*, if all had nerve and judgment. If done in hurry, disorder, and alarm, and in the dark (but Why in the dark?) *the steps*, instead of assisting, *would be an obstacle*, and there might be grazed shins or minor injuries in moving along the defile; but surely this would be far better, supposing that the defile were passed, and the passengers in the open space before the engine and beyond the scope of the collision when it might happen, than enjoying a comfortable seat in the carriages *until the time when the crash came*. Still the narrowness of the space between the train and the wall might have led me to suggest, not that the off-door should be locked, and all left to get out at the other, but that, if the off-line were *known to be clear*, they should be directed and guided to make their way on the off-side, till they could pass the disabled train, and then cross over to the near side, and keep to the near wall. The prudence of the one or the other course is still, however, an open question, to be discussed presently; and it will be found that, in consequence of the defile being so narrow, the case is more complicated than I had thought. The difficulty of escape would be very great, should the disabled train, or a part of it, as at Straffan, be forced by the concussion along its own line; especially if, at the same time, a train were to appear in the contrary direction; for it is, I admit, *certain*, that to sit in a train with such protection as the carriages may afford, bad as that case is, is better than standing in the face of another train, without any protection at all.

The tunnel near the Brighton Terminus, on the way to Shoreham, measures across, on the floor, 23 feet; and in describing it, I shall avail myself of the well-known rule of the road, and the technical terms "near" and "off" side; the near side being the left, the off-side the right, *as you go*. We suppose a train to be disabled on its way. Unless forced on by a

collision with another travelling the same way, it becomes an obstruction, which renders the near-side, or that on which it was travelling, the *side of safety*; the off-side, which is free for a train to pass in the opposite direction, is the *side of danger*. As convenience may require, I may therefore use the terms *safety-side* for the near, and *danger-side* for the off-side.

Table I., *Measurement of a Tunnel.**

(Narrow-guage.)	Ft.	in.
From the wall on the near-side to the left "near" rail.	3	3
Left "near" rail	0	3
Between the two "near" rails	4	9
Right "near" rail	0	3
The "six foot," or space between the two pairs of rails.	6	0
Left "off" rail	0	3
Between the two "off" rails	4	9
Right "off" rail	0	3
From the right "off" rail to the wall on the "off" side	3	3
Extreme breadth of the floor of the tunnel	23	0

Table II., *Measurement of the Tunnel, with two Trains abreast.*

From the "near" wall, clear of the broadest luggage van, at the step...	1	7
Extreme breadth (at the step) of the van on the "near" rail	8	7
Clear vacant space in the middle	2	8
Extreme breadth of the van on the "off" rail	8	7
Space between the van on the "off" rail and the wall .	1	7
Extreme breadth of the floor of the tunnel	23	0

In the tunnel which I measured, there is a considerable bulge outwards; it increases gradually as the tunnel rises, and, at the height of 3 or 4 feet, where a man with his back to the wall

* Although this may be about the measurement of the longer tunnels, to judge by the eye in passing, there must be less space between the rail and the wall in some of the shorter.

would occupy most space, the extreme measurement may be eighteen inches to two feet more, the slope leaving him, in the narrow defile, between the train and the wall, nine inches to a foot extra, or with the nineteen, 28 to 31 inches. Some tunnels I was told, are built perpendicularly, and have no bulge inwards; probably they are wider in consequence.

Now, supposing a person to make himself up into as narrow a compass as possible, fixing his back against the wall, although it may be mechanically certain that he needs not, necessarily, be injured in the least, it is equally sure that it would require the utmost stretch of nerve and resolution, to insure his safety. As there is a safer plan, no one does it; the plate-layer for instance, when two trains are in sight, in contrary directions, lies down in "the six-foot," or space betweeen the trains; and there he is safe.

The spaces, two of nineteen inches, and one of thirty-two inches shewn in the Table II., are the only spaces *absolutely clear* when two trains pass abreast; but the measurement of the train is taken at the steps, which project very considerably beyond the carriages, and about 2 inches beyond the largest luggage vans, which are the broadest vehicles, not excepting the engines, (even those with their connecting rods working outside) that we could find at the terminus at Brighton.

By measurement we find then, that there are absolutely clear nineteen inches, besides the bulge of the tunnel, from the step of the van to the wall; and as the broadest van does not quite extend to the step, but has two inches to spare, there are higher up twenty-one inches clear besides the bulge, making 30 to 33 inches. A man, therefore, unless of very extraordinary size, would have a few inches to spare, even between a passing train and the wall; the stoutest man would be safe, and his legs or shins only be threatened by the step, if the luggage vans were no broader than the carriages; but we must of course estimate danger by the widest vans, of which one in a train would, it is obvious, be enough for mischief. As collisions may occur in tunnels, or an axle may break, or from other causes a train be thrown off the rail and exposed to strike against the wall, or come in contact with a train travelling in the contrary direction, the practice

of widening luggage vans and carriages, seems to be one well worthy of attention, in investigating the sources of danger in Railway travelling, and the means of avoiding them. I have made no measurements; but if I am not mistaken, the bars across the windows of the North Kent carriages indicate, that travellers on that line are exposed to greater danger, in consequence of the greater width of their carriages; and to judge from the eye and from report, though their tunnels may be no smaller, these remarks and calculations will not apply, if their carriages are broader than the Brighton luggage van which I measured.

A man has stood in a tunnel whilst two trains passed in opposite directions at considerable speed. He had crossed from one line to another to avoid one, when he caught sight of the other, without time to lie down in the "six-foot." Taken by surprise his escape was miraculous, for at his feet he had but thirty-two inches to stand in, and if there were but one such luggage van as we measured in each train, he could have had but thirty-six inches clear between the trains, not only to stand in, but, finding his way into the very middle of the tunnel, to stand secure.

Security in the "six-foot" arises from the steps not reaching lower than sixteen to twenty inches, leaving room for a man to lie down under them as the train passes; once down and steady, a man is safe; but as I find by a return of casualties, that there are *many* among platelayers, it seems worthy of consideration and caution, whether this security is not misunderstood; for it appears to me, that novices at the work, made acquainted with this precaution, but not reflecting on all the bearings of the subject, and miscalculating the approach of an express or other train, may have been killed in the act of seeking their place of refuge, and cut to pieces by the steps, before they had time to lie down, so as to clear them. The morning after I wrote this, there appeared, in the "*Times*," an account of a man being killed in a tunnel, his head cut "clean off." He might have been, as is supposed, knocked down by the buffer, and his head cut off by the wheel; but it seems possible, that, in lying down, or raising his head when down, thinking that both trains had

passed, the step of one or the other train may have severed the head from the body. These are painful things to think and write of. Platelayers, and workmen, and men passing through tunnels on duty, are killed "TOO OFTEN." Might not some have been saved by LIGHT IN THE TUNNELS? Why then are they DARK?

The "three-feet-three," Table I., might, to most men, if they could lie down and adjust themselves carefully with their arms close to their sides, be a refuge-place between the train and the wall; but, like a standing position there, although measurement may shew that it is actually safe, this requires resolution and presence of mind, such as men only of the strongest nerve can exert, and which they would only put to the test at an unexpected extremity, if they had presence of mind as well as nerve.

From the foregoing explanations, it will be obvious, that, although there *is* safety in standing by the side, or in the middle of a tunnel occupied by two trains passing in opposite directions and crossing each other there, whatever courage or nerve I may have, I never could contemplate recommending that my fellow travellers, men, women, or children, should quit their seats, either, without guidance, to run along on the "off" line at the risk of being cut to pieces; to stand and await consequences either at the side, or in the middle of a tunnel; or to lie down in the "six-foot" or the "three-feet-three." I do not boast of courage or of nerve; were it otherwise, I should be humbled by the recollection of the officer who led a forlorn hope, carried the post, got thanks and promotion from his commanding officers, and at Head Quarters; and then sent in his resignation, for fear that his conduct should lead them to repose confidence in him on another occasion, whilst he was conscious that courage was wanting, and that impulse, and the impossibility of retreat had been really the cause of his success. No man should depend on nerve and courage; they may fail him when most wanted; but reflection and insight into the real condition of things before us may, if it give not nerve to face real danger, preclude unnecessary alarm at danger which only impends and which judgment and precaution may avert. Courage of this description may be exerted by many who would be scared and

paralyzed when danger might actually come; and dozens may be found in every train, who with practice, and knowing what to do, would assist the guard in regulating the movements of their fellow-travellers, and keeping out of danger the infirm, the timid, or the rash.

There are in the long tunnels, (I may here mention,) what are called "holes," or excavations at every quarter of a mile, calculated to hold twenty people or more; these would afford shelter and refuge for the aged and the infirm, and for females and children; and I should imagine that means might be found for lighting up these, and indeed the whole line of tunnel, at no great expense, especially if to be done *only*, (but why so?) in cases of stoppages occurring in one. Gas has been found expensive, and I remember that it has proved to be *quite useless* for the purpose of lighting up the tunnel for a passing train; but in case of a hindrance or a collision, the light would have been beyond value. Oil lamps, with large bright reflectors might be kept constantly in order, and the first cost of them would be fully compensated by their use and advantage if it became necessary to light them *but once;* they might be lighted simultaneously by machinery; or if that be not practicable at a charge sufficiently moderate, common lucifers, with which the guards should be amply provided, would answer the purpose. To have the tunnels lighted in case of a stoppage, would most materially facilitate arrangements for removing the passengers out of danger, into a place of safety. Hand-lanterns, or small torches, there ought to be in abundance, in every train, night or day, unless light be provided in tunnels as above suggested. But even in the darkness, invisible, described by "One Conversant with Railways," I should be content to endeavor to pilot a child entrusted to my care; nor would I hesitate to try the experiment even on a whole train of excursionists, rather than see them in the "darkness visible" of a first class carriage, or leave them in the dark in others, to sit still in their places, in the face of a train known to be approaching; with no better security against collision than the means usually put in practice on these occasions.

I do not assume that they shall be in the wildest condition of

ignorance as to what is to be done, nor, the whole number, unconcious where danger lies, and where safety. But even with all to explain, I would rather court these difficulties, than feel whilst "going a-head," that there might arise a greater necessity for the exercise of the nerves, when returning to extricate dead bodies and the wounded from the wreck. I write in the first person, because "One Conversant with Railways," appeals to me personally—my "inexperience" may not be much greater than his, for he does not seem to have been in a collision; and in the case to which he calls attention, where none left their seats, as there was no collision, the chief difference to third class passengers in open carriages, would have been, that if they had got out, as I propose, they would have removed from an atmosphere of steam, to one more genial, as they walked onwards from the disabled train and bellowing engine—whose useless bellowing might have been stopped, as every train ought to be at once, when it becomes next to certain that it cannot go on: for, whilst the driver is endeavoring to avoid a stoppage, with an engine that wont work and must come to at last, a train which the guard might have stopped if sent back in good time, may be gaining on the disabled train.

In illustration of the necessity for rule and order, I will instance two cases: one liable to correction, as I write only from recollection; the other occurred to myself.

There is an abstract notion, and it is a true one, but inapplicable, I think, to the present argument, that a danger needs only to turn up, for men, women, and children to run directly into it. This I believe only to occur in cases of sudden alarm, not where those taken by surprise expect direction, or know where to look for it. A number of workmen, used to the rail, were at work and standing on a mound when the alarm was given, that a train was close on them; and I think at least six out of fourteen or fifteen were cut to pieces. Had these men known which way to go in case of a surprise—had they been working in a tunnel where they had fixed rules for avoiding danger, some or all of those killed would, in all likelihood, have escaped. The 5 o'clock Brighton Express was once, from some cause, either damage to its own engine, or a break-down of a South

Eastern train, brought to a stand near the entrance of the Merstham Tunnel. Now in one Express just a-head of another, this was no position to await consequences in one's seat, and I accordingly got out, knowing that the Hastings Express was to follow in five minutes after we left London, and some short time had been lost by us in gradually bringing the train to a stand. When this occurred, I got out and remained on the line to see the Hastings Express come up before I resumed my seat. But not only did I cross the up-line without looking out for a train coming to town, but the hat of a gentleman who had remained in the train blew off, and I re-crossed the up-line, and went some distance down to pick it up, and then re-crossed to the off side, without any thought, care, or precaution whatever. Reflection showed me the danger, which I had mercifully been permitted to escape. I have now a rule where I had none; and so would it be with the multitudes; very soon, few would want guides; and those that might, would find them in numbers:—men with or without nerve, but with common prudence, would learn for themselves, and aid those who might have need, whether from want of knowledge, or from want of nerve.

Let us now deliberately discuss the question, Where is safety, where danger in a tunnel? for it seems to be admitted, on all hands, that in an *open country*, at an *unexpected hindrance*, there can be no question as to the wisdom of quitting the carriages, and awaiting consequences, beyond the reach of danger; and it is to be hoped that every guard, on every rail in this country, and in every country, will have directions, on every such occasion, to assure the travellers that they *will not be left behind*. And as regards *known obstructions*, every one approves the practice which has been adopted recently on the Brighton Line, of distributing short printed notices of the nature of the difficulty and expected delay, throughout the carriages. These have proved a source of confidence, and have altogether prevented irregularity and confusion. Passengers have very properly *kept their places*, and no hindrance has occurred from unwise disregard of the notices.

Where then is safety in case of stoppage *in a tunnel?* The answer is, that there is *absolute safety*,—unless the disabled

train be propelled onwards on the line, by the impinging train,—IN THE "TWELVE-FEET-TEN," or the space between the near wall and the steps of a train passing on the off side in the contrary direction.

If men, women, or children, once clear of their own train, WILL with a clear road-way of twelve feet ten, on which they may walk on in safety—with a wall on the left to guide the most timid, and twelve feet ten inches (except themselves) between themselves and danger—a *safety-side* of twelve feet ten inches—a road-way on which if they stray from the wall they will cross two iron rails, against one or both of which they may strike their feet, and stumble to warn them that they are diverging;—If with a road-way nearly as wide and a-half as the pathway of London Bridge, which is only 9 feet, whilst this in the tunnel is 12 feet 10 inches, men, women, and children, WILL stray, in greater numbers than the numbers likely to be killed, maimed, and disfigured at the crash which may be the alternative,—then is my argument dislocated, and I discomfited, altogether. If the whole body, or a great portion, in defiance of the cautions of even a few, would immolate themselves before a coming train, (which may not come at all) then there is no safety in a tunnel, and they had better sit still, till the *carriages* are crushed when *they* may escape.

But, it may be urged,—You are travelling somewhat out of the record. The crash does not necessarily come. If it should not come, and by your plan, even one should be killed, or injured in reaching, or straying beyond the place of safety, that one, and it may be more, would be unnecessarily killed, or injured! This would be fair argument if we had not that frequency of collisions which renders the argument necessary; or, if it were the fact that men, women, and children, when warned where danger is, or knowing, in the nature of things, where it is—despite every precaution and despising all directions, DO, as the rule, RUSH INTO IT. Suppose for instance that a dense fog were to envelop London Bridge, would not the men, women, or children crossing it, instinctively, or by some process of ratiocination, come to an immediate conclusion that if they would keep out of the way of the carriages they must feel

for the wall,—and when they found it, or those who had found it first,—they must hold to this guidance in order to avoid the dangers of the carriage-way? I believe that "the rule of the rail" once known—the knowledge that there is absolute safety in the "twelve-feet-ten" impressed on every traveller,—there would be no more danger of finding, even in a dark tunnel, (but again I repeat, Why a *dark* tunnel?) man, woman, or child, crushed on the *danger-side*, than there is of men, women, or children rushing singly, or in numbers, under the wheels of the carriages on London Bridge in a fog; or those of an express, from the platform at Reigate, Three Bridges, or Hayward's Heath. I do not remember to have heard that in the densest fog in London, throughout the many thousand miles which street added to street would number, the multitudes of passers along the pavements, wide or narrow, of our crowded metropolis wander into the carriage-way; yet how large a proportion of those footpaths, is not one-third of the width of the *safety-side* of a tunnel? Let the gas be turned off on a winter's afternoon through the Strand, and Fleet Street, whilst the crowds are in full vigour, and cabs and omnibuses still passing and re-passing in numbers, the carriages might be blocked up by collisions in the carriage-way, or might wander on to the pathways;—restive horses and bewildered drivers, defying the check of the curb-stone might intrude on the foot passengers; but not a foot-passenger, depend on it, would stray towards them: neither were the "rule of the rail" known, would a single man, woman, or child be attracted into danger by the rude rumbling and puffing of the coming engine, any more than by the din of the rude oaths and uproarious recriminations of coachmen and cabmen pealing in their ears! With the knowledge of their safety and how to ensure it, there would be security for five hundred in a tunnel, as great as for any proportionate number in Fleet-street or the Strand. In the street, beyond the current of men moving along "the wall," there would be a current between them and the dangers of the carriage way, passing in the opposite direction and obstructing their progress; of these I do not believe one would be at risk from his own act, whatever might happen from an incursion *from the*

danger-side, which might, by the unwilling act of another, damage him. But the locomotive and its train are safer companions in a tunnel; they "keep the even tenor of their way," and tied to an undeviating course give, with the warning of their approach, assurance that, unless intruded on, they are powerless for mischief. Were there rule and order it would soon be known that there is absolute safety in the "twelve-feet-ten," and certain death if a train passes in "ten-feet-two" beyond: and in the darkest tunnel, (and, again, why should there not be light?) if the *eyes* were not allowed to watch, the *hands* would feel their way, and the *ears* assist; there would be no danger, from a double movement, to an outer current; and I question much whether, with a train of five hundred excursionists in the twelve-(looking to the natural inequalities of progress,) there would not in a minute or two from starting, be a compact body arranging themselves within some four to six feet of the wall, and leaving a "six-feet-ten" clear on the right hand between themselves and danger, and in absolute safety, unless their own train were forced over them; every inch of their march placing so much distance between them and their danger; which if it did threaten to overtake them at last, would possibly give them time for a race, and could only overtake them after their escaping such destructive and perilous consequences as are held out for our contemplation by the horrors of Clay Cross or Straffan.

Yet I must argue fairly, and admit, that *if* the train, or a part of it, as did happen at Straffan, were forced along the line, on the unprotected multitude, they, unless better drilled than I think they could be, might be in greater danger even than those seated in the carriages awaiting the collision, as it did come, even with all its horrors, at Straffan. But there is happily an *if*; that *if, removable.* We must discuss that *if* on which much of the question of safety turns. One question suggests itself at starting, and many will follow:—What objection is there to the wheels being locked? Was there an incline at Straffan? Did the engine, tender, and two carriages detached, move onward slowly, by reason of their "*vis inertiæ*" overcome? or were they forced upwards on a gradient, or across a level

by the unexhausted impetus of the impinging train?—that impetus which had raised over the engine and tender, and forced the engine and tender under a whole body of carriages equal to the length of the engine and tender—as is shewn to have been the case; for two ladies who could not, without greater hurt, have been shot out of their seats in the back Coupé, were deposited on the top of the tender.* Has any such consequence as forcing on the train resulted in other cases? If so, what was the length of the train struck? How many carriages were doubled up, how many forced on? An investigation such as this, the multitude of questions which force themselves, each with its own importance, on our careful deliberation, if we would do justice to them, remind me, that I must revert from detail to generalities, if I would strike while the iron's hot on the horrors of Straffan.

To principles then, instead of detail. We may see every day hundreds of trains pushed on by an engine from a ticket station to the terminus. This may be done by a slow movement, even where there are switches to pass and a gentle curvature of the line to move over; but it is different when the impinging train runs on with fatal and disastrous speed, unless the couplings break. From recollection that Straffan was the first instance of its kind of which I have read, and from conversation with an experienced railway officer, I have reason to think, that this seldom happens when a *whole train* is run down; it may to a single engine with tender. The general if not uniform tendency of collisions is to "double up" the carriages of the disabled train, and if the train moves at all at the further extremity from the concussion, it seldom, perhaps, progresses more than a few feet. At all events if it should pursue the passengers as they speed on, the crash behind would be heard in time to warn them that the *side of safety had become the side of danger;* that they are in an *altered state of things;* and knowing that *across* they would still have their

* It is experience such as this—facts such as these—which ought to be sought out, investigated, and useful knowledge deduced. Sinful it is to waste such bitterly bought experience.

"twelve-feet-ten" of *safety from their own train* they would take advantage of it, if not threatened by a train on the off line; to stop which, as well as the other, every precaution would have been taken, and in all probability with full time for it. Under any circumstances there would be, even in the supposed complication of disasters if the other train crossed, the refuge, such as it is, of the "six-foot" or the "three-feet-three."

We have now contemplated the passengers in the "twelve-feet-ten;" and unless under a complication of difficulties such as cannot be expected, there is safety there, absolute within the scope of that breadth. But we have not yet investigated the means and difficulties of getting the five hundred excursionists free of their own train, at the danger of being crushed or injured by its wreck if smashed;—whether between it and the near wall, or the wall on the off side; besides being exposed, beyond a space of ten-feet-two from the off side, to the danger of being cut to pieces by a train on the off line. This was the question left as an open one, in an earlier part of this Pamphlet.

The first difficulty thrown in the way of the safest course for the removal of the train load of excursionists—that through the narrow defile between the train and the wall (where the passengers though in danger from collision, would be under none from the off line,) is the great breadth of the luggage vans, and unevenness and awkward adjustment of the steps of the vans as well as the carriages. In America, and on the Continent, the steps are made the roadway of communication along the train, and for taking the tickets—without hindrance at the stations,—whilst the train is in progress. The carriages on our English lines might be provided with steps on the same principle for the use of the guard; and instead of the other steps which are used, convenient, it is true, for their immediate purpose, but dangerous to the guard, there might be substituted with great advantage, the carriage step shewn at the Great Exhibition, which, by an ingenious, but extremely simple contrivance, opens as the door opens, and shuts as it shuts. Were these plans adopted there would be on either side of every train a comfortable roadway on a step 9½ inches wide, with a space amply sufficient for the body: and in a dark tunnel (but,

again, Why a *dark* tunnel?) if assisted by hand-lights or small torches, or some means of partial lighting which ought to be in every train, the five hundred would find their way along the train into the "twelve-feet-ten" with a regularity forced on them by the narrowness of the defile. But this assumes many alterations, which would be expensive, particularly the reduction in breadth of the luggage vans, and larger carriages; especially on some lines. But why, in a matter of public convenience, such as facility without loss of time for taking tickets, coupled with comparative safety—and *very great* comparative safety to the guard in passing along the line, we should have been for years behind hand, as contrasted with America and the Continent, it becomes those who have the regulation of these matters to explain—which I think it not impossible that they may do satisfactorily, and it is to be hoped that they will; for the public will be better satisfied if it can be done, than they will be with grazed shins and injured limbs should they attempt the narrow defile in the "three-feet-three" under existing difficulties. With large vans and carriages, instead of vans and carriages no wider than the smaller carriages; with narrow steps *under the vans, excepting about two inches of projection beyond,* instead of an open space above a good broad step; with heavy stubborn iron projections at irregular intervals, instead of an invisible step shut in under the carriage by the act of closing the door; and besides all this with the steps, such as they are, much shorter than they might be, were the intervals no longer than necessary to allow full play for the buffers—there are many unnecessary difficulties in the way of making a convenient exit from the carriages, in the "narrow defile" before spoken of, and which interfere with what might be a clear pathway into safety on each side of the carriages when stopped in a tunnel. These difficulties it may be desirable to remove gradually, if not immediately.

For, let us see how the case stands. The narrowest carriage measures 7 feet in width, or $3\frac{1}{2}$ feet from the middle of the rails on which it stands; its breadth from step to step is 8 feet 7 inches. Let us put our reflections on these measurements down in order.

From the near wall, to the middle of the rails on the near side, the distance is,

3 ft. 3 in.+0 ft. 3 in.+2 ft. 4½ in. =	5 ft. 10½in.
From the middle to the extreme of the small carriages, (not the steps)	3 ft. 6 in.
This leaves an open space independent of the bulge of the tunnel of	2 ft. 4½ in.

In this any man of moderate or even considerable dimensions might, if there were no larger carriages and vans, move freely onwards along the outside of the train.

The extreme breadth of all carriages and vans *at the step* is nearly uniform, or 8 feet 7 inches, as seen in Table II.; wherefore there might be 1 foot 7 inches of footway *on the step* beyond the carriages, or 9½ inches *on each side*, without encroaching on the small space left in constructing platforms and places into which the carriages draw up. This seems so fitting to the American and Continental fashion of things just spoken of, that it looks as if the rising generation of railway authorities had trenched on propriety, by giving undue room to travellers within, at the expense of "railway danger" to the guards, which it would be more becoming to avoid. I call to mind an instance, I think of a guard, (where, I do not remember,) being cut to pieces—nay two instances. Could it have been owing to the unnecessary projection of his body beyond one of these large luggage vans? Had he to stand on a step projecting only about two inches beyond the van or carriage? and may he have been forced, when the train was in motion, especially if his foot slipped, to fall into such an angle in recovering himself, as to bring his body into contact with a wall of a bridge or tunnel, or a post by the road-side? I remember to have thought, as I read the account, *How could this happen?* Thought and investigation lead me now to ask, Did it happen *thus?* May not the like occur again under the circumstances indicated, if those circumstances were not the cause of death and mutilation on that sad occasion? These seem enquiries pertinent to an honest investigation into the causes of Railway

Dangers and the means of avoiding them. By proper management this man might have had a clear road-way along the train, on the step, of nine inches and a half; and assisted by a hand-rail along the vans and carriages, which need not be very unornamental, he might have kept an upright position, free from danger; but having only two inches of step-way beyond the body of the van, or carriage, the moving onward whilst the train sped on became a very different thing, with fatal consequences.

Between the side of the tunnel and the broader carriages, there is, it has been seen, *nineteen* inches *at the steps, twenty-one* inches *above ;—little enough*—but with the bulge of the tunnel *still* enough for the purpose, whether the steps assist or obstruct the way: their feet clear of the steps, there is an open space for the passengers, to pass between the wall and the largest carriages and vans of 1 ft. 9 in., and between the smaller carriages and the wall, there are 2 ft. $4\frac{1}{2}$ in.

The question is, Whether is it better to take the passengers this way, or on the other side? On the "near" side they cannot stray into danger, on the off side they might; but the free space would be rather wider on the off side, and unless they had the benefit of the steps for a road-way, *having greater scope*, some of the passengers might be expected to roam too far—how many in proportion must be *matter of opinion.* I should venture to hope, if rule and order were established, *none.* But as the extreme measurement of safe road-way is the twelve-feet-ten, *minus* (1 ft. 7 in. + 8ft. 7 in.=) *ten-feet-two*, or *two-feet eight*,—less than one yard wide—*unless it were certain that no train could arrive on the off line*, narrow as the path is between the wall and the large vans, I should prefer it for a body of excursionists. Pent up in the "*one-foot-nine*," or "*two-feet-four-and-a-half*," it would be safer, especially for the timid, to move on there, than in the "two-feet-eight." It is true that the case would be widely different if an "*off train*" came in sight, with a "*near train*" *at a stand*, than if *both* were in motion; and to those on the off side in the "two-feet-eight," their own train would answer as a bulwark, like the wall of the tunnel to those on the near side; but still it is a

very narrow path between them and *certain death, if they took the wrong way*, in any panic, which I do not deny might happen. Every guard ought to know of the approach and times of trains on the opposite line; and every special train, or extraordinary engine, ought to be telegraphed, and the guard (though it might be difficult) should endeavor to keep the passengers (however unlikely that they would meet a train,) as close as possible to their own carriages, and within the "two-feet-eight."

The prospect of a collision occuring before the disabled train can be passed, and the "twelve-feet-ten" reached, depends, of course, on the practice of the rail, in allowing time between the trains—and on the speed of the impinging train; but it would seldom happen, I think, before the whole body had moved along the "one-foot-nine," or the "two-feet-eight," either or both, and were many yards clear a-head of the disabled engine. *If it came*,—it would seldom be less than ten minutes in coming—their position would not be worse, their danger certainly not *more* imminent, than it would have been had they remained to sustain the crash in the carriages.

The question wanted sifting, and at the risk of being tedious, I have endeavored to meet every argument that can be urged against quitting our places *even in a tunnel*.

Now for the deep cutting! However "long and darksome" the tunnel (but, why *darksome?*) there is a firm road-way and shelter *there* from inclement weather; and a stoppage in a tunnel has many advantages, especially if divested (as it ought to be) of the darkness, over one in a deep cutting; such as are the approaches to the Clayton and the Merstham. Passing through these twice a day for years, the Correspondent of the "*Daily News*" will see that my "inexperience," such as it is, has not been acquired without the contemplation of "tunnels and deep cuttings." To scan, then, the *pros* and *cons*, and draw some comparisons between tunnels and deep cuttings, as localities for a stoppage and provisions against collision. Although there is considerably more space at the sides of the cutting than of the tunnel, there will be found encumbering the former, heavy pieces of timber, sleepers, rails, chairs, (the irons for fixing the

rails,) and other railway gear, to stumble over into danger; —greasy, chalky, or slippery clay footing; and deep pools of water at every step: moreover, after dark, a deep cutting could not, in case of a collision, be brilliantly lighted up, as it is to be hoped the tunnels *soon will be*. Though other conditions of things may be still worse in a cutting than a tunnel, I should still hope for the congratulations of friend "One Conversant with Railways" if we ever should shake hands, some dull, cold, dreary, drizzling, pitch-dark, dismal night—lighted with an abundant supply of torches and bright lanterns, which will liberally be provided for all such future occasions—on the possibility of *our* piloting, even through a deep cutting, our mud bespattered fellow travellers; drenched, but cheerful, as they hear a distant crash and know but the sad drawback,—safe, one and all themselves—the only drawback; fear for the passengers in the impinging train, and first and foremost in the post of danger, the engine driver and stoker; who may be killed, scalded, burnt, mutilated, maimed; but if they escape unhurt, or whether hurt or not, may be chained or manacled, led before a Coroner's Jury, committed for trial, and the committal approved by the "*Times*," in anticipation of the verdict of a convicting jury—and all because they cannot see, in time, on such a night as just described, a dull red light, waved far enough off, peradventure, under such untoward circumstances—of weather, and of *waving*—to be invisible. Conviction ought not to depend on experiment; man and man compared, sight is different—but mercy calls loudly for acquittal; nay more, justice seems to require it. Speaking of the Straffan case to "one conversant with" Railway Signals, who has for years understood, regulated, and, I doubt not, often been dependent on them for his own safety, I observed. "The guard waved the light as he went on towards the cattle train," "*Then the man could not see it at all!*" was the reply, with the clenched fist fixed firmly on the chest, "This is the way to shew a light!" There is enough in that reply, in justice to save these men; and let the "*Times*" prate as it may about a subject so serious as the ruin of two men whom God has spared from instant death; the Press will, I hope, aid in undoing the unconstitutional proceeding of passing

an influential verdict to be read by thousands, in favor of their committal before their case comes to trial. Would that this effort could raise a fund to enable these men to obtain the best legal assistance, or give them some consolation if acquitted,—or if convicted, for the support of their families, if they need it,—after the indignities and injuries they have suffered because they did not, or could not, see a dull red light. Engine drivers and stokers have feelings as acute as other men, and they and their wives and families suffer as much or more, from ruin and disgrace, than Peers and Magnates, whether of an Empire, or the Press.

It has occured to me, that, for the purposes of warning to a coming train, and avoiding collisions, a man, on foot, with a flag, or a lantern, or a fog-signal, is not the best medium; and that *as a principle*, machinery might be superadded,—for I would not depend on either alone,—and that machinery would be the earlier and the more undeviating of the two in fulfilling its object—and thus the best and only means now in use would be found subsidiary to the other. An appeal to the sense of hearing as well as sight has double advantage; and a *machine* constructed to strike a warning *on the ear* could exercise no discretion as to whether it was dark, or there were light enough left *to see* the danger. Any engineer could soon contrive an axle to carry, by clock work, or other moving power, at any determined or regulated pace along the line, a pair of wheels of suitable diameter, made of stout glass or other frangible material, protected from grit or unevenness of the rail by rings of volcanized rubber, or gutta percha; or some other material if that be not suitable: it might be fitted to any pace from something better than the walk of the guard, to the speed of the railway itself. Without any great complexity of contrivance it might carry on the periphery of the wheels, as many detonators as might be thought sufficient, which would be crushed, *with the wheels themselves*, on reaching the "coming train," and give as loud a signal as could be desired. The rate of travelling to give this warning might, I should think, be at least double that of a man on foot, without endangering workmen or others on the line, or crossing it; especially as the axle

might work in a box containing machinery of no great cost, which might raise a discordant octave of unmistakeable whistles or unearthly sounds, rattles, or other uncouth music; or an occasional report equal to a pistol-shot:—intimations of its own approach more effectual than the distant rumbling and puffing of the locomotive is of *hers*. Locomotives, like "men-of-war," are "*shes*." From the box also, at night, might be discharged at intervals some brilliant Roman-candles, or other fireworks, let off by percussion: or it might carry down the line a "Catherine wheel," or "flower-pot," of great scope and brilliancy, contrived to burn long enough to prove a special protection against any approach within the distance required for pulling up the "coming train." The wheels of course would be destroyed, but the more expensive part of the machinery would (I should think it possible so to contrive) be left between the rails, its support being removed without risking damage to it, or to the coming train, from throwing it off the line; and it might be picked up at leisure, to do duty with another pair of wheels. Every one I talk to has some scheme—but, I think, that a pair, or more, of such machines as I have described, might, at no great cost be supplied to every train in motion on the line, and used with certain effect, if duly inspected and kept in order. They should be kept ready wound up, and one of course unlocked and sent forth on its way immediately on any casual stoppage likely to last for more than a minute or two. Whether this suggestion contains elements of safety or not, there are many competent judges to be found—and competent judges will, I hope, if they condemn this, find some better substitute for a dull red light; than which although it be the *ultimum* of nearly twenty years' experience in railway signalling, experience has shewn, in other instances than the Straffan collision, I believe—but if not in others, certainly in that—that there can hardly be a worse. A green light at double the distance would "catch the eye" better than than this dull red one. If the plan proposed be too expensive, some cheaper method might be found to effect the object of signalizing by machinery moving in the direction of the coming engine.

The Electric Telegraph is, of course, calculated to be an

important help in signalling, and preventing collisions—and, indeed, the plan of the Chairman of the South Eastern, if adopted throughout the country, must, unless there be gross neglect, such as justly to render the offender liable to the penalties of an aggravated misdemeanor, or worse,—be a sure means of preventing any collision on any railway. This plan was explained by a correspondent of the "*Times*," early in October. It is simply this; never to let a train pass any station until it is signalled from the station next beyond that "the line is clear." If this were obligatory in every case, without exception, it is obvious that there would be nothing to run into—and such we are told is the practice of the South Eastern, and on that line "there are no collisions;" *but it is not adopted on any other line in the country.* Why? asks every reader. I imagine that in carrying on the ordinary traffic of passengers, workmen, goods, cattle, ballast, &c., and running *special* engines or whole trains, it would be impossible to make the rule absolute; and besides, in the necessities of things, shunting must go on, and train follow train between stations, to meet the exigency for rapid travelling, as well for goods and materials of railway work, as for passengers,—unless more were thrown into night-work; an alternative greatly to be deprecated. At a terminus continual shunting must go on. Nor do I think that at a cross station, such as Reigate for instance, where I have occasionally watched the traffic, and been surprised at its extent, it would be possible to carry out the plan on every occasion to which it is applicable, so as to make it a perfect safeguard against collision. Unnecessary shunting in the face of a coming train seems altogether unwarrantable; and I suppose that, everywhere, it must be prohibited. But danger might be avoided by even a partial operation of such a rule, and the application of the instantaneous power of communication which is possessed in the Electric Telegraph. The recent collision at Hornsey affords a complete illustration of what I mean. The station-master *did* telegraph the *obstruction*, but *too late.* The obstruction arose from a break-down in shunting the coal train. Had he, instead of waiting till the roadway was blocked up, telegraphed his "*intention to shunt*,"

and had it been his duty to follow up that notice with intelligence that the line was "*clear after shunting*," the Express train might have started with the knowledge that there had been an obstruction placed in its way, which, *it was evident from no second message*, had not been removed; that the line consequently might not be clear, and that it would be necessary to draw up before it reached Hornsey. No time worth thinking about would have been lost, had there been no break-down:—and the Express might have been made instrumental in clearing away the difficulty, instead of running into it, and encumbering the line with its own wreck. Here was a disaster which it wanted neither labor nor money, nor other process than the simplest application of common prudence might have dictated, to prevent.

But whether applied absolutely or partially, or under the modified view of allowing shunting, *after notice, but notice to be repeated when it is done*—the rule of the South Eastern should be extended to the Brighton traffic, or might bear injuriously, in no common degree, on us travellers on the latter. When I read that "no collisions occur" on the South Eastern, it immediately occurred to me to enquire how long this rule had been in operation; inasmuch as I well remembered that, not many months ago, (in March, 1853 I find,) a goods' train *did* run into a ballast train *at Merstham*. I had heard at the time, on the spot, that it was an early Brighton train which came in contact with the South Eastern trucks; but, on referring to the papers, I have since ascertained that this was not the case, but that it was one of their own goods' trains which ran into the ballast train, injuring twelve to seventeen people; eight cases sent to St. Thomas' Hospital. Now, if there be a telegraph at Merstham, it may be presumed, as both trains were South Eastern, that the rule had not then come into operation; if otherwise, and there were no telegraph at Merstham, the rule would be mischievous in the extreme, if the Merstham people were allowed to shunt at all when passenger traffic was going on. There was no telegraph at Balcombe the other day when the bank slipped: there may be none at the petty stations of Merstham and Stoat's Nest. What follows? To apply the rule only at the large stations, Croydon

and Reigate, and allow shunting at Mertsham and Stoat's Nest, when Reigate might telegraph to Croydon "the line clear," would give confidence to the driver to run boldly into danger, with full assurance of safety, and the plan would be worse than useless. But the Merstham station master *might* if he have a telegraph, and if he *must shunt*, and if he be prohibited from shunting before a South Eastern train, keep all his superfluous shunting, so as to bear up the character of the South Eastern for "no collision," and throw all the risk on the Brighton travellers. When rival companies do not "pull together" on the same line, (things which we hear talked of, but I have heard that this is not *now* the case on the line in question) such a caution may not be inappropriate to the subject which I have in hand. The possibility of the shunting of two Companies being thrown in the way of the travellers of one, for want of a mutual good understanding, indicates that even such an improvement in system, as that of the Chairman of the South Eastern, ought not to be exclusive; and that a combined movement for the general safety, might be better than trusting signals and precautions to the skill or energy of this or that body of directors, to be applied—however satisfactory to the parties, and to those dependent on them for protection,—still so as not only to be inoperative for good to others, but absolutely dangerous, owing to want of co-operation. As it is, we must depend, I presume, on the Chairman of the South Eastern to keep us clear of all South Eastern trucks.

This reminds me of another source of Railway Danger. The case is "a bygone," and it would not be mentioned, but that the evil may possibly be found on other lines, and if so, the sooner passengers see to it—as we did—the better. I allude to the practice of making depôts of ballast trucks on a siding, half way up a steep cutting. About a furlong on the Brighton side of the Merstham Tunnel, there was once a train of four or five trucks, the last of which was inclined towards the roadway, at an angle of about 45 degrees. As we whizzed past in the express, it seemed to be like Mahomet's Tomb, suspended by some magic power 'twixt earth and sky. It reminded one of the loaded waggon in a dilemma, in the illustrations to treatises

on mechanics. It was evidently no place for an experiment to find the centre of gravity; and we were left to the conclusion that there had been sad carelessness in forcing the last truck over the siding, which might have capsized the whole five into the roadway in the face of a train load of excursionists, or other passenger train; or else the bank might have given way under the weight, which might have resulted in much the same thing,—loss of life and limb. It is true that inspection shewed that it was propped up by strong posts; and moreover, I was informed, that it was chained from above, and that it was *perfectly safe;* but engineers are not infallible; and because it was necessary to use strong posts and chains at all, and it is clear that appliances of security were necessary, it becomes a self-evident proposition, that sidings for trucks, cut into deep cuttings, are things to be eschewed, and worthy the attention of railway travellers, as causes of danger to be avoided.

Sidings however might, perhaps, be contrived for lines of passengers along the steep cuttings, above the risk of damage from a crash;—as they have been, but we hope will be no longer, for trucks; they need not be so elevated nor so threatening. These would be places of refuge at moderate intervals, like the "holes" in the tunnels before spoken of. It is a question for engineers to exercise their skill and prudence on, for the general security.

To revert to the plan of the Chairman of the South Eastern. For that, as well as any other line exclusively,—and therefore I imagine for the whole collectively,—it is, in the opinion of all with whom I have conversed, the best of all the schemes devised for preventing collisions. But as the Electric Telegraph may get out of order, or those who work it may neglect or make mistakes, its adoption ought not to supersede any other means of precaution: especially if the station-master should be left at liberty to start one train to follow another, on a line reported clear from below.

This leads me to speak of collisions, where the passengers are helpless and must meet the danger in their seats; where collisions occur when both trains are in motion. This I believe occurred once when trains have *met* on the same line, by some mismanagement; and even in broad daylight, I think there is an

instance on record of a fast train running down another, which had not been brought to a stand. I have not time to search for the particulars of these cases; but even the newspaper reports might contain hints and suggestions to be derived from peculiarities in what has occurred, indicative of safety or danger, as connected with one or other position in the train, in the carriage, or in each separate compartment. Enquiry might contradict opinions formed from recollection. Search for incidents and a thorough investigation into their bearings is the task (it may be remembered) which I assigned to duly appointed officers of the highest talent and experience. It is an office which I will not attempt. But inasmuch as I think it not impossible that, at Straffan, the action of Lord Guillamore in causing his party to lie down on the floor, and of a second class passenger in lying down on the seat at the moment of the crash, *both protective,* may have been the consequence of reading of the escape of the countryman who was pitched unhurt over a bridge at Falmer—a fall of some five and twenty feet—in a third class carriage, *under the seat,* whilst his companions were thrown out of it and killed, I will venture on a few speculations resulting out of what appears to me to be the nature of things, observation, or even of my own *experience,* at the risk of being twitted by friend "One Conversant with Railways," or some irritated *leading-articlist,* with the "*quorum pars magna fui.*"

An express train I look on as unquestionably the safest—the probabilities are vastly against being run into, even though another may be close behind you. You may depend on it no engine driver, be he never so inconsiderate and rash, will try to run into and overtake you—even in an express. An impinging train may be reckoned always to have the advantage. I have heard of one express shivering to atoms a luggage van and its contents, which stood right across the line; and another cutting through another train in motion, with very slight damage. Did safety depend, so to speak, on the guidance of man,—if the direction of the train round a curve, or into a another line, or siding, at the switches, depended on the steadiness of head or hand of the driver or guard, I might feel differently. We are dependent on them for checking speed

when necessary, and stopping the train with judgment, but no more. To this their power of control is limited. Mechanism does the rest, and the carriages, held together by the thread of the small coupling screws, speed on at the rate of fifty to sixty miles an hour, sustained in their undeviating course, through a medium, whose properties were not understood when Stephenson began his contest with that "resistance of the atmosphere," which ought to have stopped him before he could attain a speed of fifteen miles an hour; *but did not;* and we may find when we KNOW more, that for our *progress* we are indebted to an "*atmospheric assistance*" after all. At all events Stephenson triumphed, and we benefit.

As I walked to the train, this morning, having written the foregoing passage, and those which follow, over-night,—a lad was trundling an iron hoop along the road: he had, I had observed, given it but a gentle touch, and it moved down a very gentle incline for a considerable distance between him and me, with a steadiness and uprightness of course which fixed my attention. There was nothing extraordinary about hoop or boy, it was a small hoop of rod iron, it had consequently little hold on the ground, and on the hard, dry, chalky soil, it is probable that no indentation would have been traceable, certainly there would not have been any on a hardened steel incline. Had it been a hoop of flat bar iron, or a common cask hoop, its course would not have been so regular: yet it would seem that mechanically speaking, it would have had a greater hold on the earth and have kept a steadier course; but *as it was,* there was that undeviating fixity of motion to its own plane which drew my attention, and brought the incident into connection with my subject. I do not intend a philosophical discussion on atmospheric forces, which here, would be out of place; I therefore will conclude this interpolation with the remark, that the train and the hoop move in the medium which conveys, and even prints, the electric message, which we know may one day communicate, in time, inappreciable, from extremes across, or even round the globe. It may be owing to peculiar views which I have long entertained of the nature of atmospheric forces, that I have the greatest confidence in speed—and knowing that the best of gear

is requisite, and is used in consequence of speed, I connect with speed, in every sense, the sense of security; inasmuch as the greater the speed, the greater the precautions, in every particular; the more likely that the road is kept clear before the train; and, the shorter the time on the journey, the sooner we are out of the way of Railway Dangers. Experience has shown that on the narrow guage the distance between London and Brighton, can be done in an hour, and, since the coupling of the carriages has been better understood than it used to be,—without undue oscillation: and although opinion is divided, there are many who think that notwithstanding there may be a limit to rapid travelling, that rate, say fifty to sixty miles an hour, when the line is in order, is quite a safe one as regards speed; and that any excess of time beyond the hour on that journey comes under the category—inversely to the "greater the speed"—"the *longer the time*, the greater the danger on the rail."

Whatever the cause, and whatever our views of safety, experience of the rail never leads those who are accustomed to it to have any misgivings, or to tremble at an express pace. To my mind we seem to travel, in a remarkable and special manner, at all times, but more particularly at the extremes of speed, under an Almighty direction for the benefit of man. It is true we are reminded of the mechanism which aids, and in some sense, still, under the same direction, controls; and that the fracture of a rail, or the tyer of a wheel, or an axle would, and occasionally (though not within my own experience) does disarrange the machinery, and throw a train off the line; and so we must acknowledge ourselves dependent as a means on mechanical contrivance; but when we reflect that this occurs so seldom, and so many tens of thousands of miles are traversed without damage or hindrance, the regularity and safety of railway travelling seems next to, nay, quite miraculous; nor is this a contradiction to the *truism* with which we set out. Disasters "occur too often," because from defect of precautions there are so many exceptions to what we may call the "general rule of safety," and traceable to neglect either of signals or of attention to them; the injuries to man and to machinery by the error of

man, are far greater than injuries to man by wear and tear, or defect of machinery.

The middle compartments of the carriages, and the middle of a train, are generally preferred; but we can scarcely talk of any place as a place of safety when a crash may come. When I wrote that the engine driver's position at a collision was "next to certain" death, I grieve to say, I wrote advisedly. Yet the engine and tender of the cattle train at Straffan penetrated through masses of carriage-work, and the engineer and stoker were unhurt. Two ladies out of three in a coupé at the end of the train escaped unhurt: but nobody expecting a collision would prefer the end coupé of a train *to be run into*, any more than guards would be found (let us trust) to take their places in a glass-box in the front of the engine as some one has suggested. Though the notion of a guard with undivided responsibility to watch progress be a wise one, and the look-out from such a position may be admirably adapted to ensure the safety of the passengers; and although it might be possible to *persuade* a *pressed man* that it would be for the good of his country to be tied to the muzzle of a loaded cannon, to be discharged on some condition dependent on keenness of eyesight and observation, few *volunteers* would offer for either duty: the positions of the engine driver and stoker are, it has been amply proved, perilous enough, without finding a post of danger more imminent for an additional guard, which is urged on the directors by many correspondents of the daily papers, and supported by a very general opinion on the part of their constant readers, that there ought to be a captain of the train with undivided duty and responsibility.

There seems a general dislike to carriages close to the engine; but at Straffan the two next the engine and tender were detached by the breaking of the couplings; and, formidable as that crash was, one of the travellers, awakened out of his sleep, wondered why the train moved on so slowly, and when it stopped, why it did not proceed, unconscious of the fatal and distressing scenes behind. Position in the train would seem to matter little. The tail end of an express may be preferable, especially if it be determined that the passengers get out at any

lengthened and unexplained stoppage by the way,—inasmuch as it may run into, but will seldom be run in upon.

One thing seems almost sure, that there is under any circumstances of collision and a crash, some comparative degree of safety in a middle compartment, *under the seat*, which has been attributed to the mass of wood and iron-work, and the difficulty of "doubling it up."

Some have thought, considering the heavy blows from heads meeting at a concussion, in cases of sudden stoppage or collision, that it would be safer to sit back to back against a partition in the middle, than as we now do, face to face. But I have always supposed the consequences to be more serious from blows on the temple than on the forehead, and possibly it is better for head to meet head than for the side of the head to be struck violently against even a padded partition; for much of the force of the concussion may be broken, and its evil consequences averted, by the effort which both parties may instantaneously, but unconsciously make to resist it. A middle seat has once been shewn to be better than a side one; a passenger's leg was broken by the intruding buffer, whilst his next neighbour escaped unhurt. Padded sides are in every respect preferable to sharp hard corners; and it is more comfortable to loll "to starboard," on the "*off*," or "to port" on the "*near*," side against a cushion, than a handsome piece of polished mahogany. And here I would urge on Directors and the public, the comparatively excessive injury which, I have been well informed, attends second class travellers from in cases of collision, from this cause. This is a purely financial question I believe, and it is a pity that it could not be settled with greater security to the persons and limbs of those who occupy these ill-provided carriages. It is the constant remark of travellers from the Continent, that, there, the second class carriages are almost equal in comfort to the first.

It would be well if Directors of English railways, would ascertain whether there is such a disproportion between the extent of injury in cases of Continental collisions to second class passengers, as to warrant their trying further experiments or the generosity of Shareholders on the one hand, and of the British Public on the other; and affording to travellers on

our island, that protection which they find in second class carriages across the channel. One point is obvious as regards the object of the present enquiry, which looks to considerations of safety, apart from the payment of money; if a collision should come, the condition of the first class traveller in the comfortable padded carriage, is unquestionably worth any difference of reckoning at the pay-wicket.

It is a mere notion of my own, that, in the event of an engine leaving the line and ploughing down an embankment, and eventually overturning the train, there is safety *in a third class open carriage*—though the speed be considerable,—in watching the *moment of upsettal,* and then quitting the carriage by a leap from the upper side, *just at that moment,* rather than earlier, when the fall might be more severe. I think, that, in the act of upsetting, the speed is checked, and the onward impetus exhausted; and that the passenger would alight with less danger of being heavily thrown,—if he fell at all.

I have heard of travellers at a crash, escaping by holding on to the hat strap, and suspending themselves to swing according to the movement of the impelling force, or its reaction; and without sustaining injury.

The rim of the hat has, in some instances, been the cause of a frightful gash, even to scalping the forehead of an opposite neighbour. It has occured to me that some sort of cap, with an inflated, or otherwise elastic wadding—would protect the forehead, and possibly cause less injury and disfigurement. It would be a sort of buffer, and we need not care for unsightliness; nobody sees us as we flit along: and, besides, some clever ornamentalist would soon overcome that small difficulty. But I imagine that it is by no means certain, that this would be beneficial—and it may be that, although the action of the buffers prevents mischief to heavy, solid, inert materials, such an expedient might do more harm than good. After the first effect of the collision had been expended on the elastic medium, the reaction of elasticity might induce severer injury to the brain, than would occur from a smart blow, when the effort of self-protection, which the instant might dictate, whatever that effort—probably the right—might be, would be more

energetic, and more likely to resist the impending danger. It is more than possible that nobody will exactly understand what I mean; but the bare suggestion of an inflated or an elastic cap may induce discussion, and lead to some useful discovery—in substitution for stiff peaks of caps, and hat rims.

I do not remember to have read of any severe injuries having been inflicted from articles carried in the train, in situations exposing the travellers to danger. Their removal is not, I believe, thought of, as a general rule; but it is important that it should be. I will give an instance; it occurred years ago; eight or nine. I was travelling in a third class open carriage, and had taken the first seat, with my face to the engine. A mechanic with a huge pit-saw entered the carriage, passed to the opposite corner, and seated himself, after carefully adjusting his saw with *its teeth to the engine*—and the face of a passenger opposite; there it stood on end, three to four feet above the carriage. I ventured to suggest to the said passenger, that railway travellers did not expect collisions, or men would hardly travel by rail at all: but still that such things did sometimes happen, and that, if one were to occur before the end of the journey, *bad for contact as the sharp edge of the carriage might be,* it was at least preferable, *without the intervention of a pit-saw.* One of the attendants was ready to remove it at our call; but the guard would not allow this, and insisted on the saw keeping its position; offering "if the gentleman was afraid," to find him another seat, which was done. There can be no objection to workmen carrying their tools; but when they expose their fellow-travellers to unnecessary dangers, such as are threatened by heavy rods of iron, exposed cutting instruments, a glazier's apparatus, and such like, the removal of such things to the luggage van or to the top of a carriage, should be insisted on; otherwise unnecessary maiming, incisions, contusions, or such other surgical consequence or appellative as may attach to the result of the meeting of a pit-saw, with teeth of at least an inch indentation, and the *os frontis* of a passenger may ensue. On such a trifling incident might depend loss of a life, where a slight hurt only might have been the consequence of a collision.

The question of signals, generally, is too important, too

comprehensive, and too complex for discussion in this pamphlet. Telegraphs are of course useless in fogs; fog-signals are excellent, but too little in use in clear daylight as already suggested. It seems probable that regular and habitual signals may be *neglected* as well as noticed *from habit;* sudden signals for sudden emergencies seem most fitting. Its great power *to illuminate with effect a very large space,* appears to point out the ordinary *blue light* used at sea, as a good signal to be carried by the guard on proceeding towards a coming train. Distant sounds of ordnance may be lost in the din of the working of the engine and rumbling of the wheels.

All these things, however, are matter for systematic arrangement, after careful enquiry, by authority, rather than for an individual to pursue. An Irish barrister, at an inquest on thirteen or fourteen of the dead at the fatal Straffan collision, declared that £20,000 would be the reward of any one who could discover some means of communication between the guard and driver: yet the guard in America, or Belgium, can communicate rapidly along a safe footway on the steps—whilst the guard in England may be crushed in attempting it! Was this a mere flourish about £20,000? Or have the Directors of Irish Railways, neglecting for a season the contemplation of the share lists, and reflections on the influence of war or peace on the funds, and of the funds on the railway market, set a laudable example, by reading up the coroners' inquests, and discovered that the duty of protecting the lives of passengers, and especially of their own servants is *paramount.* And how long has this practice of offering rewards been *concealed,* so that nothing has been discovered for communication between the guard of one train, and the driver of another train, better than a dull red light? It is not a bad hint however of the Irish Barrister, and, *if publicity were given* to such offers—or offers much more moderate would be sufficient,—railway dangers might be fewer, and means of avoiding them better adapted to that end. Useful inventions would fast spring up, and fewer difficulties would be found in the way of their inventors. Many of those which may exist are pointed out by Mr. Charles Dickens, in "*Household Words,*" No. 88, of

the 29th November, 1851, in reply to the question: "Need Railway travellers be smashed?" He describes machinery of great simplicity,—greater simplicity, I dare say, than the description of it,—calculated to meet and overcome great complexity of interlacing difficulties, and act with never-failing correctness as long as the machinery will last. A small instrument placed on the line on which an obstruction occurs, fitted to act on another attached to the engine of any coming train, will cut off the steam; reverse the engine; put on the break: and will do all this; bring the train to a stand; and, in the act of doing it, set an "*index*," or "*tell-tale*," that the *machine did it all*, because the driver *neglected* signals (if he had them and *could see* them) and *left it undone*. The signal apparatus moreover we are told in the quaint style of Mr. Charles Dickens, is so simple that it is "no more likely to get out of order than a kettle-bottom is likely to wear into a cullender."

"This contrivance," it is stated, "is the patented invention of a Mr. C. F. Whitworth. It had been tested for months, fifteen or twenty times a day, upon a small private line of rail belonging to the Butterley Company, the manufacturers of the apparatus; and on this little line at Codnor Park, it had not failed in one out of more than a thousand trials, it had not failed once."

Mr. Dickens concludes the article with the following paragraph:—"All that we have to say, by way of comment on the matter is, that we, as travellers, having found out the existence of an invention which promises to lessen our risk of life and limb on railway lines, expect that this invention shall be fairly tested by the Railway Companies, and properly adopted if found good. Small as the risk of railway travelling may be, it ought to be much smaller: the occurrence of a preventible accident is, in plain words, a crime on the part of those who could have prevented it and did not. If Mr. Whitworth's plan be good, no Board of Directors ought to fear the small expence attendant upon its adoption. The money lost by calamities on a line, if put against this outlay, may seem something less; we do not know how that may be;

but may we be allowed to hint, that the loss of credit which follows upon every casualty is, perhaps, also to be considered; and that the more or less of public confidence may not be inoperative on the value of a Railway Share?"

This article has been pointed out to me as one which ought not to be overlooked in a pamphlet on the subject of Railway Dangers, and the means of avoiding them. I can only say, that I am no more interested in the invention than any fellow traveller who may read these pages; and am an entire stranger to all the parties. The inference which I draw from the article is this;—that the patentee should have the opportunity afforded to him of stopping a train, in the presence of a deputation of periodical travellers who may feel interested in it, at some convenient spot near London; or *at the same time*, the Directors that of *proving* that it does *not* deserve that encouragement which has been denied to the inventor for many years.

A great source of Railway Danger may arise from injudicious arrangements for extensive goods' traffic. Here is an instance. I have been informed that an increasing coal traffic of the Great Northern is brought on the up-line from the northern counties to the Hornsey Station, and, as the coal sheds, or depôts, are on the wrong side of the railway, all has to be shunted across the down line before it is unloaded. Might not this be remedied by removing the coal sheds to the other side; or, if they must remain where they are, by contriving the means of crossing the coals to the depôt *under the rails*, instead of across the down line, at the risk of the passengers travelling to the north?

It has been suggested to me that, as the travellers are disposed, when any mischief happens, to suppose that the guard neglects his duty, it might be satisfactory, as well to the travellers as to him, if one or more gentlemen from the train would accompany him back towards the "coming train," and see that he shews his flag or light, and deposits the fog signals, and otherwise does his duty. I so far approve of this arrangement, as to say, that I shall be happy, at all seasons, and in all weathers, by night or by day, to attend to such a

request on the part of the guard, whether in the open country, in a tunnel, or in a deep cutting. I believe that this requires neither nerve nor any great presence of mind, or I would not offer to do so; it needs, to my mind, only the commonest exercise of common sense, with a little of energy and activity, to keep out of all danger; yet if we were to reason it out, I think we should find, that, if there be any *danger* at all in *using common sense precautions against it*, the task of accompanying the guard may be a trifle more perilous than getting out and moving the other way, *even in a tunnel.*

I care little for the personal sneer of the critic, but may owe some apology for intruding so much about myself, and what I have seen. What I have related is, I hope, pertinent to my subject; and experience, such as it is, may be useful; it is better than reasoning on mere surmise. And I may even give a few more hints from personal experience. Our times are in God's hands; but God works His will by means. We are well and sound in health and limb; in a moment we may be killed or crushed. Rules regarding the *entering a train in motion* are important, but ought not, I think, to be absolute; great caution, however, is necessary in carrying them out. Delay of an hour may cause serious anxieties; and in cases of extreme urgency a man is, I think, warranted in attempting, and the attendants might not be held reprehensible for allowing it, when satisfied that it is safe, *as it seldom is not when any one attempts it.* A medical man may be stopped on "the Bridge," or detained from other cause, and an hour's delay may be of importance to his patient. Of this or other urgency there would be no time for explanation; therefore, prudent men should be selected, and might be entrusted with a discretion. I would, however, *earnestly* recommend to *every traveller* as *the rule,* NEVER to get into a carriage when the train is actually in motion; the whistle done, and the train off, be the movement never so little, DESIST. If absolutely necessary to break the rule, the way clear, and the men willing and assisting, I would *now* never attempt it as an exception to the rule, unless I could gain on the train so far as to attain to a carriage length, or, at all events, a compartment length,

beyond the open door, so as to be able to turn round, and deliberately meet and enter the carriage as it comes gently on. It is more dangerous than those who have not tried it think, to get into a carriage in the act of overtaking it,—as I have proved; one is encumbered with the door, and may slip on the step in endeavouring to avoid it. Much depends on the demeanor of the railway people. It is more than likely that my life and limbs were one day saved by the gentlemanly caution, "I think you had better not attempt it, Sir!" which brought me up, in an instant;—for on my arrival in town, that very day, I was told that a gentleman had been killed the day before on the South Western line, under somewhat similar circumstances. I once saw the narrowest possible escape from over-zeal and injudicious conduct of a porter. A third class passenger got well in, when the train was in motion; the porter sprang up into the carriage after him, caught him by the collar, and with a violent effort dragged him out, and they both fell heavily some feet clear of the train on the platform. Had the man found time to resist the guard and held on by any part of the carriage, one or both would in all probability have been killed or injured under the wheels.

There is *great danger* from *getting out* before the train stops: but if any one is determined to do so, NEVER, neither for a practical joke, nor in earnest, attempt to stop him. A lady was attempting to get out, at Brighton, checked by some fellow traveller, and dreadfully mutilated under the wheels. As regards signals to the guards *in transitu*, I once succeeded, merely by using a red India handkerchief out of the window, in attracting the attention of the guard to a dry axle which screeched unquestionable mischief. Some objection was made on account of delay, but it was found necessary to take the carriage off and leave it behind at the next siding; and then I was thanked by my fellow travellers, for prudent interference.

I cannot conclude without offering up my humble thanksgivings to God for protection over now upwards of five years, almost daily journeying to and fro, and after traversing up-

wards of 150,000 miles of railway. I have said much about dangers—because dangers and avoiding them are the burthen of this essay. Whilst I would earnestly entreat Directors to look more closely into this branch of their duty—and whilst I look to God as the Supreme Director of all human events, this is not incompatible with a sense of gratitude to those to whose skill, carefulness, and general good management we are indebted, under Him, for that protection which has enabled me to write before, and now to repeat, that throughout this period it has never fallen to me to have the experience, not only of a collision, but of anything approaching to danger; excepting when, in one instance, we were saved from it by the care of the men at the switches removing us off our own on to another line.*

My subject is hardly exhausted. There is, for instance, an important point which, however, I must leave: that is, the comparative safety of Railway, Coach, and Boat travelling, which might be pursued if space would permit, even to the extent of an inquiry into the *safeties* at a *crash*.

I have already remarked, however, that the floor of a middle compartment may be, even at such a time, safe; as Lord Guillamore found it to be. It may be important to enquire, whether there is an uniform immunity from dangers in middle compartments, and whether those travelling in them did or did not seek refuge on the floor; and if they wholly or only partially escaped? A middle compartment is, I am told, reserved for ladies; and it ought to be the duty of the station masters and their assistants to watch for young children, and sick and infirm persons, and provide them with this protection; to them every sense of propriety indicates that their fellow travellers should concede this preference, if it be worthy of the concession.

To enable me to form a judgment as to means of safety at

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* It will be satisfactory to those who contributed to a testimonial on that occasion, which was likely to have failed altogether at one time, from the untoward circumstances which were explained, that the money was divided between the Railway Servants' Benevolent Fund, Barrett's family, and George Wood, to whom the medal was eventually presented.

extremities in Railway travelling, I would respectfully solicit communications from parties who have been in collisions, and noted any interesting particulars developed by them. If the information should not be published, I will endeavor to collate particulars, and make the results useful, wherever and whenever opportunity may occur.

Reader! If in this essay I have dwelt more particularly on the dangers to which engine drivers, stokers, guards, and other railway servants are exposed, it is because there is fifty —a hundred—any fold you please, the greater occasion for it. The casualities of collisions, as they regard these men, are out of any scale of comparison which does not give provision for their safety the vast prominence. Two have been cut to pieces since the first of these sheets was put to press. One might have been saved by a light in the tunnel.

When the engine burst at Brighton, I wrote to the "*Times*" soliciting its aid in bestirring public benevolence, with the view of raising an ample fund to provide in comfort for the families of killed, and for maimed and disabled railway servants. I take this opportunity of repeating the effort, then ineffectual for want of publication, in their behalf: with the offer of as much leisure as it may need, or I may be able justly to bestow in order to organize means for the application and distribution of a handsome fund. Pecuniary means I have not, but what I can I do most cheerfully offer;—some energy still left and perseverance as long as I may be able to serve a small body of men to whom—a unit among millions,—I owe so much.

There is an old story—it may be the manufacture of a jest book—but it may be true, and it is apposite, and suitable to this appeal. A man sent up word to a nobleman that his brother wished for an interview. His lordship desired to see the man who thus claimed kindred with him. The man pleaded poverty to excuse the intrusion; that we were all children of one common father, Adam; and he hoped his lordship would assist his brother. His lordship gave him a penny, observing that if all his brethren did the same he would be the richer man of the two. But, my lords and gentlemen, there is a

tie which binds you, in duty, towards the railway servants, more proximate than the mere community of kindred between man and man. You are served at a personal risk of the extent of which I hesitate not to say to every reader, you know little;—nothing;—the statistics would surprise, though they would not fully inform you. Let then the rich communicate with their bankers as these men deserve of them, and we shall soon see a noble range of buildings raised—and there cannot be a better place than Brighton for this noble purpose. This public appeal will render it incumbent on me, by diligence, to make my services valuable and acceptable, if I can. The offer is made in earnest, and with two stipulations:—

The first, that if the education of children be, as it ought to be, a part of the scheme,* * *

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The other stipulation,—that the offer may be disinterested,—is, that if my services be accepted, and I have no desire to intrude them, they shall be entirely honorary. I would not damp the ardour of subscribers by offering a "job" for their contemplation.

What I have written in the way of precaution applies

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* At the suggestion of friends, at whose instance I undertook to write this Essay, I strike out and defer to a second edition the first stipulation, which they consider foreign to a Pamphlet on "Railway Dangers."—though not foreign to my individual duty, in connection with any institution, such as that which I venture to urge on the benevolence of my readers.—W. P.

chiefly to the active and energetic; they will be safe enough if they be left to their discretion, and may find some hints in this pamphlet worthy of their notice. Of energy and activity there is not such a want, that those who need both will not find helpers.

But there is another class of travellers, and a care for them would lead us to devote much time to the investigation of the safeties of the crash. Reader! if you still are blessed with activity and energy, and a train comes to a stand; another train may not come down, but you think it prudent to act as if it would, and you are right. But in doing so, you look around and discover in the carriage with you—or may have observed, tottering into another,—one of the aged and infirm, the paralytic or the lame; weak, and incapable of self-protection. God will give you help if you ask it, and desire in your heart to act towards that poor fellow-creature, rich or poor, as you would wish to be done by; and you may one day be in this state of helplessness yourself. These ought to be especially cared for, and the guard ought to know where all such helpless persons are to be found; and he may want nerve, or assistance. What would you do? You suggest, perhaps, that this is no concern of yours; that it is dangerous; and it is the duty of the railway servants to attend to this. When lamenting with another old Indian the fatal disaster at Chilianwala, I once heard a third party say "Soldiers are paid to be shot!" This might have been a sentiment dropped in *thoughtlessness*; but from one of the "gentlemen of England, who live at home at ease," it fell heavily, painfully, gratingly, on the ear. I hope that the same sentiment does not prevail amongst Railway Directors, as a body, towards their servants; it cannot, if they *think*. Engine drivers are *not* paid to be killed, but to work *protected by every possible means of protection, at whatever cost;* so are guards and all other railway servants. What then, friend "One Conversant with Railways," or other traveller? Well-paid or underpaid, suppose the guard to fail in our common duty to the infirm, the invalid, or the otherwise helpless,—would you quit the carriage and leave in the train an aged and infirm fellow traveller to be crushed?

I pressed on one who knows all railway dangers well, and who had long contended with me as to the relative safety of five hundred going ahead in a tunnel, or remaining in their seats, this question, "If you were satisfied—no matter how —that your signals were neglected, and the train coming down on us in a tunnel, what should be done then?" Without hesitation he replied that he would "bolt." The word was expressive of recklessness as to what he might have to encounter anywhere else, and I have a right to take it for my argument. But the question, settled thus far, another opens. Would he bolt, and leave behind a crippled, or an aged and infirm person, that could not be removed; or would he not, even at such an extremity, string his nerve—and because I know he has it, I have confidence in such a man—to succour a fellow creature in that same extremity. If the eye and bearing of a man give any test of character, I hesitate not to say, that I feel assured he would not forsake the helpless. Why then you or I? He, I believe, would be no more likely to leave an aged person in the train, than he would be to run back in the face of the coming train to stop it.

Reader, if you have trust in God, and in His promises—if you have kept "the first and great commandment," and have faith in Him who has told you that "the second is like unto it," —by His blessing you may be enabled to remember that second commandment if your aid is needed; which may be the case with you or me to-morrow.

I have talked of nerve. Would your nerve fail you? Mine might; or I might find some excuse. This would not avail the sick or helpless. *Nerve* and *courage* are handmaids, that will help on the man that is in earnest to keep the "second" commandment of the law; and if he have rightly received and understood the "first," *both* may spring out of his acceptance of it. Nerve may be acquired. It is not that courage which will face all danger, real or imaginary, and reck not which. It is not the courage of the midshipman, who (I heard Admiral Napier tell the story to the House of Commons) foiled of the opportunity of blowing up the enemy's vessels, and disappointed at nothing coming of the expedition, took out

the plug of one of the shells ; which, if the act had not been discovered in time, would have blown up himself and his companions. The nerve that is wanted is that which, in any shape, sees danger in its reality, prepares for it, and acts.

I remember instances of nerve, and of the want of it Cardinal Wolsey is better known for his want of nerve than by all his acts. Vaulting ambition shrunk into helplessness before the stroke of calamity. But we need not go so far back ; nor to martyrs or ancient heroes. A grocer's servant—I remember reading in the newspapers, some forty years ago—saw a candle stuck into a drawer full of gunpowder by a careless apprentice. It had burnt down to the very edge, with a long snuff. She gave no alarm, and carefully removed it. That brave girl had courage and had nerve ; though when poor human nature was exhausted she sunk back into a fainting fit, *as soon as she found all safe*. This was nerve in broad contra-distinction to the nervousness of fine ladies, who are all "nerves." This was the nerve of a woman with the "heart in the right place."

The pilot of a Scotch steamer, who, at the helm of the burning vessel, as the heat generated a vast supply of steam which propelled her with terrific speed—in proportion to which, the flames flew aft towards the helmsman—still held on, because he knew that the lives of those on the bowsprit—all but himself—depended on his keeping the course of the burning ship dead on to shore, till she ran into shallow water; that man who kept his post till the blood oozed out and glued him to the deck from which he was torn a cripple for life—that man had courage and nerve unquestionable. If I remember rightly, this pilot was a Scotchman. Scotland I lament to hear is degenerating; becoming notorious for drunkenness and Sabbath breaking, though the Sabbath morn is kept decently. I question whether the pilot was one of the class of men that spend the morning in the house of prayer, and the evening at the spirit shop; but he might have been. Let the Directors of the Crystal Palace judge whether the study of the fine arts after church, 'midst shady groves and Grecian statues, would improve the moral character of the people, and string such nerves as those of the helmsman of the burning steamer.

Whence comes this nerve? It is not the nerve of the suicide who wrote a deliberate protest against a coroner's verdict of insanity, then put a pistol to his head, and blew his brains out. If this was nerve, it was nerve with the veriest cowardice; that could injure, but could not face an injured husband, or rather, I think in the instance to which I allude, the return of his own injured, absent wife. The sailor has nerve in the storm; but it might fail him across a horse. The fox-hunter has it at a gate or a fence, or as he dashes over stony ground; but it might fail him on the billows, or at the cannon's mouth. I have seen the hog chased over ground where, at intervals of a horse's length or two, the hunter leaped chasms that the longest bamboo could not fathom; or where the pursuit lay through large tufts of stiff cut reeds, every one of which was in fact a spear; I have seen horse and hunter thrown over together by one of these, and the huntsman remount, to follow the hog again;—but this was not the nerve of the grocer's servant, or of the helmsman of the Scotch steamer.

Whence comes that nerve? Philosophy will not give it; it depends not on talent, judgment, or research. We have a strong contrast of character,—of nerve, and want of it,—in the same volume. The Commander of an Indiaman, the "Melville Castle," trained to piety by his mother in early age, had read his Bible. It was his solace in life, and his stay in death. A mutiny occurred on board another Indiaman, the "Dutton," and a Lieutenant of the navy had thought it prudent to retire from alongside, the crew having threatened that they would sink his boat. With his own boat's crew, the Commander of the "Melville Castle," warned off in like manner by the mutineers, veered dexterously under the stern, and boarded the "Dutton;" took command of the quarter-deck; refused to fire on the mutineers, but reasoned with them; heard that it was their intention to blow up the ship, themselves, and all on board; coolly proceeded to the magazine; found one of the ringleaders in the act of wrenching off its iron bars, whilst another with a shovel of live coals was ready to pitch them into it; with a pistol at the

right, and, satisfactory in one sense, though formidable the reflection,—the number *only injured* is smaller; *two hundred and four*.

This leads to a very serious and solemn thought. It is beyond denial, that instantaneous death is more common on the rail than it used to be by other modes of travelling, which forces on us the reflection that Railway Dangers may be for *eternity*, as well as time. Fellow-travellers, along the road of life, May the Lord God of Heaven deliver us from sudden and unprepared death! This is the grand point of consideration for us all!

Mrs. Barrington at the crash at Straffan, besought God's protection on her knees; the attitude saved her—the cushion of the carriage warded off the wreck above, supported it, and preserved her life. Shall I have the sneer, or the contempt of the sceptic, or the scoffer, if I ask the wise men of the earth, —Was this a miracle? Was it the simple answer of the Great and Merciful God who answers prayer? or both in one? or was there no connection between the safety sought, and the prayer granted? To the scoffer or the infidel, I leave the reply. As regards the many at the instant removed from time into eternity, Our Saviour himself answers all mankind alike. "There were present at that season some that told him of the Galileans, whose blood Pilate had mingled with their sacrifices. And Jesus answering, said unto them, 'Suppose ye that these Galileans were sinners above all the Galileans, because they suffered such things? I tell you Nay: but except ye repent, ye shall all likewise perish—Or those eighteen upon whom the tower in Siloam fell, and slew them, think ye that they were sinners above all men that dwelt in Jerusalem? I tell you, Nay: but except ye repent, ye shall all likewise perish.'" And Reader, so He saith to you and to me! And though we be in danger for eternity, the word of God is clear in pointing to the way of safety. "Thou shalt love thy neighbour as thyself," though "like unto" the first is but "*the second*," for Jesus Christ himself had just declared "Thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy mind; this is the first and great Commandment."