DEATH ON THE RAIL.

Some of the Fearful Railway-Disasters of the Last Twenty Years.

A Thrillingly-Interesting Paper by Charles Francis Adams, Jr.

The Abergele, New-Hamburg, Claybridge-Lane, Norwalk, Des-Jardines-Canal, Port Jervis, Car's-Rock, and Helmshere Catastrophes.

The Causes of Their Occurrence---Defects in Management and Mechanics.

Results They Have Produced in a Permanently-Increased Safety of Travel.

Charles Francis Adams, Jr., in the Atlantic Monthly for December.

The record of railroad horrors in the most aggravated form began at Versailles on the 6th of May, 1842; and doubtless it is destined to an indefinite continuance. Since then it has sometimes seemed as though locomotives had run mad or were indulging in a very carnival of disasters, so rapidly has one catastrophe trodden upon the heels of another. At least twice in England their frequent occurrence has occasioned so much public uneasiness as to lead to circulars addressed to the corporations, in one case by the Queen herself, and in the other by the Government through the President of the Board of Trade. As a rule, these accidents were of a strikingly similar description, and a dry chronological enumeration of them would be neither profitable nor instructive. There are, however, the of them which are very memorable; some because of dramatic features in their occurrence, others because of the results which they produced in a permanently-increased safety of travel. These are not without a lasting interest, although it is almost startling to see how soon and how completely they are forgotten. For instance, who now remembers even the name of the Abergele disaster? And yet it occurred but seven years since, and it would not be easy to conceive anything more striking and terribly dramatic than those incidents connected with it which caused all England for a space to think and speak of nothing else.

THE ABERGELE ACCIDENT.

The Irish mail is a famous train in England. Leaving London at shortly after 7 a. m., it was timed in 1868 to make the distance to Chester, 166 miles, in four hours and eighteen minutes; from Chester to Holyhead is 85 miles, for running which the space of 125 minutes was allowed. Abergele is a point on the sea-coast in the north of Wales, nearly midway between these two places. On the 20th of August, 1868, the Irish mail left Chester as usual. It was made up of thirteen carriages in all, which were occupied, as the carriages of that train usually were, by a large number of persons whose names at least were widely known. Among these, on this particular occasion, were the Duchess of Abercorn, wife of the then Lord-Lieutenant of Ireland, with five children. Under the running arrangements of the London & Northwestern Road, or, as it is there called, a goods-train, left Chester half-an-hour before the mail, and was placed upon the siding at Llanddulas, a station about a mile and a half beyond Abergele, to allow the mail to pass. From Abergele to Llanddulas the track ascended by a gradient of some 60 feet to the mile. On the day of the accident, it chanced that certain wagons between the engine and the rear end of the goods-train had to be taken out to be left at Llanddulas, and, in doing this, it became necessary to separate the train and to leave five or six of the last cars in it standing on the tracks of the main line, while those which were to be left were backed on to a siding. The employe whose duty it was to have done so neglected to set the brakes on the wagons thus left standing, and consequently, when the engine and the rest of the train returned for them, the moment they were touched, and before a coupling could be effected, the jar set them in motion down the incline towards Abergele. They started so slowly that a brakeman of the train ran after them, fully expecting to catch and stop them; but, as they went down the grade, they soon outstripped him, and it became clear that there was nothing to check them until they should meet the Irish mail, then almost due. It also chanced that the cars thus loosened were oil-cars.

The track of the Northwestern Road between Abergele and Llanddulas runs along the sides of the picturesque Welsh hills, which rise up to the south, while to the north there stretches out a wide expanse of sea. The mail-train was skirting the hills and laboring up the grade at a speed of some 30 miles an hour, when its engineer suddenly perceived the loose wagons coming down upon it around the curve, and then but a few yards off. Seeing that they were oil-cars, he almost instinctively sprang from his locomotive, and was thrown down by the impetus and rolled to the side of the road-bed. Picking himself up, bruised but not seriously hurt, he saw that the collision had already taken place, that the tender had ridden directly over the engine, that the colliding cars were demolished, and that the foremost carriages of the train were already on fire. Running quickly to the rear of the train, he succeeded in uncoupling six carriages and a van, which were drawn away from the rest, before the flames extended to them, by an engine which most fortunately was following the train. All the other carriages were utterly destroyed, and every person in them perished.

The Abergele was probably a solitary instance, in the record of railroad-accidents, in which but a single survivor sustained any injury. There was no mistaking. It was death or entire escape. The collision was not a particularly-severe one, and the engineers of the mail-train especially stated that, at the moment it occurred, the loose cars were still moving so slowly that he would not have sprung from his engine had he not seen that they were loaded with oil. The very instant the collision took place, however, the fluid seemed to ignite and to flash along the train like lightning, so that it was impossible to approach a carriage when once it caught fire. The fact was, that the oil in vast quantities was spilled upon the track and ignited by the fire of the locomotive, and then the impetus of the mail-train forced all of its leading carriages into the dense mass of smoke and flame. All those who were present concurred in positively stating that not a cry, not a moan, nor a sound of any description, was heard from the burning carriages, nor did any one in them apparently make an effort to escape.

The most graphic description of this extraordinary and terrible catastrophe was that given by the Marquis of Hamilton, the eldest son of the Duke of Abercorn, whose wife and family, fortunately for themselves, occupied one of those rear carriages which were unshackled and saved. In his account the Marquis of Hamilton said: "We were startled by a collision and a shock which, though not very severe, were sufficient to throw every one against his opposite neighbor. I immediately jumped out of the carriage, when a fearful sight met my view. Already the whole of the three passengers' carriages in front of ours, the vans, and the engine, were enveloped in dense sheets of flame and smoke, rising fully 20 feet high, and spreading out in every direction. It was the work of an instant. No words can convey the instantaneous nature of the explosion and conflagration. I had actually got out almost before the shock of the collision was over, and this was the spectacle which already presented itself. Not a sound, not a scream, not a struggle to escape, not a movement of any sort, was apparent in the doomed carriages. It was as though an electric flash had at once paralyzed and stricken every one of their occupants. So complete was the absence of any presence of living or struggling life in them, that, as soon as the passengers from the other parts of the train were in some degree recovered from their first shock and consternation, it was imagined that the burning carriages were destitute of passengers—a hope soon changed into feelings of horror, when their contents of charred and mutilated remains were discovered an hour afterward. From the extent, however, of the flames, the suddenness of the conflagration, and the absence of any power to extricate themselves, no human aid would have been of any assistance to the sufferers, who, in all probability, were instantaneously suffocated by the black and fetid smoke peculiar to paraffine, which rose in volumes around the spreading flames."

Though the collision took place before 1 o'clock, in spite of the efforts of a large gang of men who were kept throwing water on the tracks, the perfect sea of flame which covered the line for a distance of some 40 or 50 yards could not be extinguished until nearly 8 o'clock in the evening; for the petroleum had flowed down into the ballasting of the road, and the rails themselves were red-hot. It was, therefore, small occasion for surprise that when the fire was at last gotten under, the remains of those who lost their lives were in some cases wholly undistinguishable, and in others almost so. Among the thirty-three victims of the disaster the body of no single one retained any traces of individuality; the faces of all were wholly destroyed, and in no case were there found feet or legs, or anything at all approaching to a perfect head. Ten corpses were finally identified as those of males, and thirteen as those of females, while the sex of ten others could not be determined. The body of one passenger, Lord Farnham, was identified by the crest on his watch; and, indeed, no better evidence of the wealth and social position of the victims of this accident could have been asked for than the collection of articles found on its site. It included diamonds of great size and singular brilliancy, rubies, opals, emeralds, gold tops of smelling-bottles, twenty-four watches, of which but two or three were not gold, chains, clasps of bags, and very many bundles of keys. Of these, the diamonds alone had successfully resisted the intense heat of the flame; the settings were nearly all destroyed.

Of the causes of this accident little need or can be said. No human appliances, no more ingenious brakes or increased strength of construction, could have averted it or warded off its consequences once it was inevitable. It was occasioned primarily by two things, the most dangerous to the most difficult to reach of the many sources of danger against which those managing railroads have unsleepingly to contend; a somewhat defective discipline, aggravated by a little not unnatural carelessness. The rule of the company was specific, that all the wagons of every goods-train should be out of the way and the track clear at least ten minutes before a passenger-train was due; but in this case shunting was going actively on when the Irish mail was within a mile and a half. A careless brakeman then forgot for once that he was leaving his wagons standing close to the head of an incline; a blow in coupling, a little heavier perhaps than usual, sufficed to set them in motion; and they happened to be loaded with oil.

Behind all this, however, there was apparent a grave and radical defect in the construction of the road or the arrangement of its sidings, in that the station at Llanddulas was placed upon an incline at all. As will hereafter be seen, this practice on the part of those laying out railroads has been the cause of frequent disaster, and must continue to be so as long as it exists. Every engineer knows perfectly well what the angle of equilibrium is; and to establish sidings, or to habitually permit shunting, where that angle is exceeded at the head of an incline, is simply to insure, soon or late, a disaster.

THE NEW-HAMBURG DISASTER.

A catastrophe strikingly similar to that at Abergele befell an express train on the Hudson River Railroad, upon the night of the 6th of February, 1871. The weather, for a number of days preceding the accident, had been unusually cold; and it is to the suffering of employes incident to exposure, and the consequent neglect of precautions on their part, that accidents are peculiarly due. On this night a freight-train was going south, all those in charge of which were sheltering themselves, during a steady run, in the caboose-car at its rear end. Suddenly, when near a bridge over Wappinger's Creek, not far from New Hamburg, they discovered that a car in the centre of the train was off the track. The train was finally stopped on the bridge; but, in stopping it, other cars were also derailed, and one of these, bearing on it two large oil-tanks, finally rested obliquely across the bridge with one end projecting over the up track. Hardly had the disabled train been brought to a standstill, when, before signal-lanterns could, in the confusion incident to the disaster, be sent out, the Pacific express from New York, which was a little behind its time, came rapidly along. As it approached the bridge, its engineer saw a red lantern swung, and instantly gave the signal to apply the brakes. It was too late to avoid the collision; but what caused had in it, so far as the engineer was concerned, an element of the heroic, which his companion, the fireman of the engine, afterwards described on the witness-stand with a directness and simplicity of language which exceeded all art. The engineer's name was Simmons, and he was familiarly known among his companions as "Doc." His fireman, Nicholas Tallon, also saw the red light swing on the bridge, and called out to him that the draw was open. In reply, Simmons told him to jump the patent brake, which he did, and by this time they were alongside of the locomotive of the disabled train and running with a somewhat slackened speed. Tallon had now got out upon the step of the locomotive, preparatory to springing off, and, turning, asked his companion if he also proposed to do the same: "Doc looked around at me, but made no reply, and then looked ahead again, watching his business; then I jumped and rolled down on the ice in the creek; the next I knew I heard the crash and saw the fire and smoke." The next saw of "Doc" Simmons, he was dragged up days afterwards from under his locomotive at the bottom of the river. But it was a good way to die. He went out of the world and of the sight of men with his hand on the lever, making no reply to the suggestion that he should leave his post, but "looking ahead and watching his business."

Dante himself could not have imagined a greater complication of horrors than then ensued; liquid fire and solid frost combined to make the work of destruction perfect. The shock of the collision broke in pieces the oil-car, igniting its contents and flinging them about in every direction. In an instant, bridge, river, locomotive, cars, and the glittering surface of the ice, were wrapped in a sheet of flame; at the same time, the strain proved too great for the trestle-work, which gave way, precipitating the locomotive, tender, baggage-cars, and one passenger-car, on to the ice, through which they instantly crushed and sank deep out of sight beneath the water. Of the remaining seven cars of the passenger-train, two, besides several of the freight-train, were destroyed by fire, and shortly, as the supports of the remaining portions of the bridge burned away, the superstructure fell on the half-submerged train and buried it from view.

Twenty-one persons lost their lives in this disaster, and a large number of others were injured; but the loss of life, it will be noticed, was only two-thirds of that at Abergele. The New-Hamburg catastrophe also differed from that at Abergele in that, under its particular circumstances, it was far more preventable, and, indeed, with the appliances since brought into use, it would surely have been avoided. The modern train-brake had, however, not then been perfected, so that even the hundred rods at which the signal was seen did not afford a sufficient space in which to stop the train. Under any circumstances, however, it is difficult to see how it is possible to guard against contingencies like those at either Abergele or New Hamburg. At the time, as is usual in such cases, the public indignation expended itself in vague denunciation of the Hudson River Railroad Company, because the disaster happened to take place upon a bridge in which there was a draw to admit the passage of vessels. There seemed to be a vague but very general impression that draw-bridges were dangerous things, and, because other accidents due to different causes had happened upon them, that this accident, from whatever cause, was in itself sufficient evidence of gross carelessness. The fact was, that not even the clumsy Connecticut rule, which compels the stopping of all trains before entering on any draw-bridge, would have sufficed to avert the New Hamburg disaster, for the river was then frozen and the draw was not in use, so that, for the time being, the bridge was an ordinary bridge; and not even in the frenzy of crude suggestions which invariably succeeds each new accident was any one ever found ignorant enough to suggest the stopping of all trains before entering upon every bridge, which, as railroads generally follow watercourses, would not infrequently necessitate an average of one stop to every 1,000 feet or so. Only incidentally did the New Hamburg have anything to do with the disaster there, the essence of which lay in the sudden derailment of an oil-car in front of a passenger-train running in the opposite direction and on the other track. Of course, if the derailment had occurred long enough before the passenger-train came up to allow the proper signals to be given, and this precaution had been neglected, then the disaster would have been due, not to the original cause, but to the defective discipline of the employes. Such does not appear to have been the case at New Hamburg, nor was that disaster by any means the first due to derailment and the throwing of cars from one track in front of a train passing upon the other. Indeed, an accident hardly less destructive, arising from that very cause, had occurred only eight months previous in England, and resulted in eighteen deaths and more than fifty cases of injury.

THE CLAYBRIDGE-LANE ACCIDENT.

A goods-train, made up of a locomotive and twenty-nine wagons, was running at a speed of some 20 miles an hour on the Great Northern Road, between Newark and Claypole, about 100 miles from London, when the forward axle under one of the wagons broke. As a result of the derailment which ensued, the train became divided, and presently the disabled car was driven by the pressure behind it out of its course and over the interval, so that it finally rested partly across the other track. At just the moment an excursion-train from London, made up of twenty-three carriages, and containing some 340 passengers, came along at a speed of about 35 miles an hour. It was quite dark, and the engineer of the freight-train in vain waved his arm as a signal of danger; one of the guards, also, showed a red light with his hand-lantern, but his action either was not seen or was misunderstood, for, without any reduction of the speed being made, the engine of the excursion-train plunged headlong into the disabled goods-wagon. The collision was so violent as to turn the engine aside off the track and cause it to strike the stone pier of a bridge near by, by which it was flung completely around and then driven up the slope of the embankment, where it toppled over like a rearing horse and fell back into the roadway. The tender likewise was overturned, but not so the carriages; they rushed along holding to the track, and the side of each as it passed was ripped and torn by the projecting end of the freight car. Of the twenty-three carriages and vans in the train, scarcely one escaped damage, while the more forward ones were in several cases lifted one on top of the other or forced partly up the embankment, whence they fell back again, crushing the passengers beneath them.

This accident occurred on the 21st of June, 1870; it was very thoroughly investigated by Capt. Tyler on behalf of the Board of Trade, with the apparent conclusion then it was one which could hardly have been guarded against. The freight-car whose broken axle occasioned the disaster did not belong to the Great Northern Company, and the wheels of the train had been properly examined by viewing and tapping at the several stopping-places; the flaw which led to the fracture was, however, of such a nature that it could have been detected only by the removal of the load. It did not appear that the employes of the Company had been guilty of any negligence; but it was difficult to avoid the conclusion that the accident was due to one of those defects to which the results of even the most perfect human workmanship must ever remain liable, and this had revealed itself under exactly those conditions which must involve the most disastrous consequences.

The English accident did, however, establish one thing, if nothing else; it showed the immeasurable superiority of the system of investigation pursued in the case of railroad-accidents in England over that pursued in this country. There, a trained expert, after the occurrence of each disaster, visits the spot and sifts the affair to the very bottom, locating responsibility, and pointing out distinctly the measures necessary to guard against its repetition. Here the case goes to a Coroner's jury, whose findings as a rule admirably sustain the ancient reputation of that august tribunal. It is absolutely sad to follow the course of these investigations, they are conducted with such an entire disregard of method and lead to such inadequate conclusions. Indeed, how could it be otherwise? The same man never investigates two accidents, and, for the one investigation he does make, he is competent only in his own esteem.

THE NORWALK ACCIDENT.

The railroad at Norwalk crosses a small inlet of Long Island Sound by means of a draw-bridge, which is approached from the direction of New York around a sharp curve. A ball at the mast-head was in 1853 the signal that the draw was open and the bridge closed to the passage of trains. The express passenger-train for Boston, consisting of a locomotive and two baggage and five passenger-cars, containing about 150 persons, left New York, as usual, at 8 o'clock that morning. The locomotive was not in charge of its usual engineer, but of a substitute named Tucker, a man who some seven years before had been injured in a previous collision on the same road, for which he did not assert that he had been in any way responsible, but who had then given up his position and gone to California, whence he had recently returned, and was now again an applicant for an engineer's situation. This was his third trip over the road as substitute. In approaching the bridge at Norwalk, he apparently wholly neglected to look for the draw-signal. He was running his train at about the usual rate of speed, and first became aware that the draw was open when within 400 feet of it, and after it had become wholly impossible to stop the train in time. He immediately whistled for brakes and reversed his engine, and then, without setting the brakes on his tender, both he and the fireman sprang off and escaped with trifling injuries. The train at this time did not appear to be moving at a speed of over 15 miles an hour. The draw was 60 feet in width; the water, in the then state of the tide, was about 12 feet deep, and the same distance below the level of the bridge. Although the speed of the train had been materially reduced, yet, when it came to the opening, it was still moving with sufficient impetus to send its locomotive clean across the 60-foot interval and to cause it to strike the opposite abutment about 8 feet below the track; then fall heavily to the bottom. The tender lodged on top of it, bottom up and resting against the other, while on top of this again was the first baggage-car. The second baggage-car, which contained also a compartment for smokers, followed, but, in falling, was canted over to the north side of the draw in such a way as not to be wholly submerged, so that most of those in it were saved. The first passenger-car plunged into the opening next; its forward end was crushed in, as it fell against the baggage-car in front of it, while its rear end dropped into the deep water below; and on top of it came the second passenger-car, barring the passengers in the first beneath the debris, and partially submerging itself. The succeeding or third passenger-car, instead of following the others, broke in two in the middle, the forward part hanging down over the edge of the draw, while the rear of it rested on the track and stayed the course of the remainder of the train. Including those in the smoking compartment, more than 100 persons were plunged into the channel, of whom forty-six lost their lives, while some thirty others were more or less severely injured. The killed were mainly among the passengers in the first car; for, in falling, the roof of the second car was split open, and it finally rested in such a position that as no succeeding car came on top of it, many of those in it were enabled to extricate themselves; indeed, more than one of the passengers, in falling, were absolutely thrown through the aperture in the roof, and, without any volition on their part, were saved with unmolestened garments.

This terrible disaster was due, not alone to the carelessness of an engineer, but to the use of a crude and inadequate system of signals. It so happened, however, that the Legislature of the State was unfortunately in session at the time, and consequently the public panic and indignation took shape in a law compelling every train on a Connecticut railroad to come to a dead stand-still before entering upon any bridge in which there was a draw. This law is still in force, and from time to time, as after the New Hamburg catastrophe, an unreasoning clamor is raised for its enactment in other States. In point of fact, it imposes a most absurd, unnecessary, and annoying delay on traveling, and rests upon the Connecticut statute-book a curious illustration of what usually happens when legislators undertake to incorporate running railroad regulations into the statutes-at-large. There is probably no source of danger to which travel by rail is subject which admits of such certain and infallible signaling as draws in bridges. The idea of stopping before approaching them is entitled to about the same respect as would be a proposal to recur to pioneer locomotives before all night trains.

ACCIDENTS AT DRAW-BRIDGES.

The machinery by which draws must be worked can be automatically connected with signals of almost any description at any desired distance. By one method in use, a careless engineer is suddenly aroused to a proper performance of his duties and a consciousness of impending danger by the disappearance of the smoke-stack of his locomotive; by yet others, his passing a given point in defiance of signals sends him crashing through a gate, and causes the sounding of an alarm sufficient to arouse all but the dead. Either of these methods secures a much greater degree of safety than a mere stopping of trains, which, in more than one instance, has proved a wholly insufficient protection.

This was curiously illustrated in the case of an accident which occurred upon the Boston & Maine Railroad on the morning of the 21st of November, 1862, when the early local passenger-train was run into the open draw of the bridge almost at the entrance to the Boston station. It so happened that the train had stopped at the Charlestown station just before going on to the bridge, and, at the time the accident occurred, was moving at a speed scarcely faster than a man could walk; and yet the locomotive was entirely submerged, as the water at that point is deep, and the only thing which probably saved the train was, that the draw was so narrow and the cars were so long that the foremost one lodged across the opening, and its forward end only was beneath the water. At the rate at which the train was moving, the resistance thus offered was sufficient to stop it, though, even as it was, no less than six persons lost their lives, and a much larger number were more or less injured. Here all the precautions imposed by the Connecticut law were taken, and served only to reveal the weak point in it. The accident was due to the neglect of the corporation in not having the draw and its system of signals interlocked in such a way that the movement of the one should automatically cause a corresponding movement of the other; and the neglect in both quarters made it possible for a careless employe to open the draw on a tremendously dark and foggy morning, while he forgot at the same to shift his signals. A statute provision making compulsory the interlocking of all draws in railroad bridges with a proper and infallible system might, therefore, have claims on the consideration of an intelligent Legislature; not so an enactment which compels the stopping of trains at points where danger is small, and makes no provision as respects other points where it is great.

And yet bridge-accidents always have been, and will probably always remain, among the worst to which travel by rail is exposed. It would be impossible for corporations to take too great precautions against them; and that the precautions taken are very great is conclusively shown by the fact that, with thousands of bridges, many times each day subjected to the strain of the passage at speed of heavy trains, so very few disasters occur. Nevertheless, there are many precautions which, in the face of terrible experience, corporations do not and will not take. For instance, every railroad bridge, not only throughout its length but throughout its approaches, should have its track protected against possible derailment. It is the exception and not the rule, however, that this is done. Long immunity from disaster breeds in a species of recklessness even in the most cautious, and yet the single mishap in a thousand must surely fall to the lot of some one. Many years ago the terrible results which must soon or late be expected, wherever the consequences of a derailment on the approaches to a bridge are not surely guarded against, were illustrated by a disaster on the Great Western Railroad of Canada which combined many of the worst horrors of both the Norwalk and the New Hamburg tragedies; more recently the almost forgotten lesson was enforced again on the Vermont & Massachusetts Road, in the bridge over the Miller River, at Athol. The accident last referred to occurred on the 15th of June, 1870, but, though forcible enough as a reminder, it was tame indeed in comparison with the Des-Jardines Canal disaster, which is still remembered though it happened as long ago as the 17th of March, 1857.

THE DES-JARDINES CANAL ACCIDENT.

The Great Western Railroad of Canada crossed the canal by a bridge at an elevation of about 60 feet. At the time of the accident there were some 18 feet of water in the canal, though, as is usual in Canada at that season, it was covered by ice some 2 feet in thickness. On the afternoon of the 17th of March, as the local accommodation-train from Hamilton was nearing the bridge, its locomotive, though it was then moving at a very slow rate of speed, was in some way thrown from the track and on to the timbers of the bridge. These it cut through, and then, falling heavily on the string-pieces, it parted them, and instantly pitched headlong on to the frozen surface of the canal below, dragging after it the tender, baggage-car, and two passenger-cars, which composed the whole train. There was nothing whatever to break the fall of 60 feet; and even then 2 feet of ice only intervened between the ruins of the train and the bottom of the canal 18 feet below. Two feet of solid ice will afford no contemptible resistance to a falling body; the locomotive and tender crushed heavily through it, and instantly sank out of sight. In falling the baggage-car struck a corner of the tender, and was thus thrown some 10 yards to one side, and was followed by the first passenger car, which, turning a somersault as it went down, fell on its roof and was crushed to fragments, but only part ally broke through the ice. Upon which the next car fell endwise, and rested in that position. That every human being in the first car was either crushed or drowned seems most natural; the only cause for astonishment is found in the fact that any one should have survived such a catastrophe,—a tumble of 60 feet on ice as solid as a rock! Yet, of four persons in the baggage-car, three went down with it, and not one of them was more than slightly injured. The engineer and fireman, and the occupants of the second passenger-car, were less fortunate. The former were both crushed under the locomotive in the bottom of the canal; while, of the latter, ten were killed, and not one escaped severe injury. Very rarely indeed in the history of railroad-accidents have so large a portion of those on the train lost their lives as in this case, for, out of ninety persons, sixty perished, and in the number was included every woman and child among the passengers, with a single exception.

There were two circumstances about this disaster worthy of especial notice. In the first place, as well as can now be ascertained, in the absence of any trustworthy record of an investigation into causes, the accident was easily preventable, though by means of appliances which even yet have never been brought into general use. It appears to have been immediately caused by the derailment of a locomotive, however occasioned, just as it was entering on a swing draw-bridge. Thrown from the tracks, there was nothing on the flooring to prevent the derailed locomotive from deflecting from its course until it toppled over the ends of the ties, nor were the ties and flooring apparently sufficiently strong to sustain it even while it held to its course. Under such circumstances, the derailment of a locomotive upon any bridge can mean only destruction; it meant it then, it means it now, and yet our country is to-day full of bridges constructed in exactly similar way. A very simple and inexpensive appliance would make accidents from this cause, if not impossible, at least highly improbable. It is only necessary to make the ties and floorings of all bridges between the tracks, and for 3 feet on either side of them, sufficiently strong to sustain the whole weight of a train off the track and in motion, while a third rail, or strong truss of wood securely fastened, should be laid down midway between the rails throughout the entire length of the bridge and its approaches. With this arrangement, as the flanges of the wheels are on the inside, it must follow that, in case of derailment and a divergence to one side or the other of the bridge, the inner side of the flange will come against the central rail or truss just so soon as the divergence amounts to half the space between the rails, which in the ordinary gauge is 2 feet and 10 inches. The wheels must then glide along this guard, holding the train from any further divergence from its course, until it can be checked. Meanwhile, as the ties and flooring extend for the space of 3 feet outside of the track, a sufficient support is furnished by them for the other wheels. A legislative enactment compelling the construction of all bridges in this way, coupled with additional provisions for the interlocking of draws with their signals in the cases of bridges across navigable waters, would be open to the objection that laws against dangers of accident by rail have almost invariably proved ineffective when they were not absurd, but in itself, if enforced, it might not improbably render disasters like those at Norwalk and Des Jardines terrors of the past. The New-Hamburg accident depended on other conditions.

There was, also, one rather noteworthy feature in the Des-Jardines accident. The question as to what is the best method of coupling together the several individual vehicles which make up every railroad-train, has always been much discussed among railroad-mechanics. The decided weight of opinion has been in favor of the strongest and closest couplings, so that under no circumstances should the train separate into parts. Taking all forms of railroad-accident together, this conclusion is probably sound. It is, however, at best only a balancing of disadvantages, a mere question as to which practice involves the least amount of danger. Yet a very terrible demonstration that there are two sides to this as to most other questions, was furnished at Des Jardines. It was the custom on the Great Western Road not only to couple the cars together in the usual method then in use, but also, as is often done now, to connect them by heavy chains on each side of the bumpers. Accordingly, when the locomotive broke through the Des Jardines bridge, it dragged the rest of the train hopelessly after it. This certainly would not have happened had the modern self-coupler been in use, and probably would not have happened had the cars been connected only by the ordinary link and pins; for the train was going very slowly, and the signal for brakes was given in ample time to apply them vigorously before the last cars came to the opening, into which they were finally dragged by the dead weight before them, and not hurried by their own impetus.

On the other hand, we have not far to go in search of scarcely less fatal disasters illustrating with equal force the other side of the proposition, in the terrible consequences which have ensued from the separation of cars in cases of derailment. Take the memorable accident of the 17th of June, 1855, near Port Jervis, on the Erie Railway, for instance.

THE PORT-JERVIS ACCIDENT.

As the express-train from New York was running at a speed of about 30 miles an hour over a perfectly straight piece of track between Otisville and Port Jervis, shortly after dark on the evening of that day, it encountered a broken rail. The train was made up of a locomotive, two baggage-cars, and five passenger-cars, all of which, except the last, passed safely over the fractured rail. The last car was apparently derailed by this, and drew the car before it off the track. There were two cars then dragged along, swaying from side to side, for a distance of some 400 feet, when the couplings at last snapped, and they went over the embankment, which was there some 30 feet in height. As they rushed down the slope, the last car turned fairly over, resting finally on its roof, while one of its heavy iron trucks broke through and fell upon the passengers beneath, killing and maiming them. The other car, more fortunate, rested at last upon its side on a pile of stones at the foot of the embankment. Six or nine were killed and fifty severely injured,—all of the former in the last car.

In this case, had the couplings held, the derailed cars would not have gone over the embankment, and the worst injuries would have been sustained. Such coupling arrangements have, however, created an equal liability to prevent the recurrence of other accidents under the same conditions as that at Port Jervis. The difficulty lay in the inability to stop a train, though moving at only moderate speed, within a reasonable time. The wretched inefficiency of the old hand-brake in a sudden emergency received one more illustration. The train seems to have run nearly half a mile after the accident took place, before it could be stopped, although the engineer had instant notice of it and reversed his locomotive. The couplings did not snap until a distance had been traversed in which the modern train-brake would have reduced the speed to a point at which they would have been subjected to no dangerous strain.

THE CAR'S-ROCK ACCIDENT.

The accident ten years later at Car's Rock, on the same road, 16 miles west of Port Jervis, was again very similar to those just described; and yet in this case the parting of the couplings alone prevented the rest of the train from dragging the head to destruction. Both disasters were occasioned by broken rails; but, while the first occurred on a tangent, the last was on a curve at a point where the road, skirting along the hills, had on one side of it a bold elevation, and on the other a steep declivity of 50 feet, jagged with rock and bowlders. The train was a long one, consisting of the locomotive, three baggage and express, and seven passenger-cars, and it encountered the broken rail while rounding the curve at a high rate of speed. Again all the train passed over the fracture in safety, except the last car, which was snapped, as it were, off the track and over the embankment. At first it was dragged along, but only for a short distance; the intense strain then broke the coupling between the four rear cars and the head of the train, and, the last of the four being already over the precipice, the others almost instantly toppled over after it and plunged and rolled down the ravine. A passenger on this portion of the train, who went with it, described the car he was in "as going over and over, until the outer roof was torn off, the sides fell out, and the inner roof was crushed in." Twenty-four persons were killed and eighty injured; but in this instance, as in that at Des Jardines, the only subject for surprise was that there were any survivors.

Accidents arising from the parting of defective couplings have of course not been uncommon, and they constitute one of the greatest dangers incident to heavy gradients in mountainous regions, freight-trains with less ferocity, but their blinder parts come thundering down the grade, as was seen at Abergele. The American passenger-trains, in which each car is provided with brakes, are much less liable than the English, the speed of which is regulated by brake-vans, to accidents of this description. Indeed, it may be questioned whether in America any serious disaster has occurred from the fact that a portion of a passenger-train on a road operated by steam got beyond control in descending an incline. There have been, however, terrible catastrophes from this cause in England, and that on the Lancashire & Yorkshire Road near Helmshere, a station some 11 miles north of Manchester, deserves a prominent place in the record of railroad-accidents.

THE HELMSHERE ACCIDENT.

It occurred in the early hours of the morning of the 4th of September, 1860. There had been a great fete at the Belleyue Gardens, in Manchester, on the 3d, upon the conclusion of which some 2,500 crowded at once upon the return-trains. Of these, there were, on the Lancashire & York-hire Road, three,—the first consisting of fourteen, the second of thirty-one, and the last of twenty-four carriages; and they were started, with an interval of ten minutes between them, at about 11 o'clock at night. The first train reached its journey in safety. Not so the second and the third. The Helmshere station is at the top of a steep incline. This the second train, drawn by two locomotives, surmounted, and then stopped for the delivery of passengers. While there were leaving the carriages, a snap as of fractured iron was heard, and the guards, looking back, saw the whole rear portion of the train, consisting of seventeen carriages and a brake-van, detached from the rest of it and quietly slipping down the incline. The detached portion was moving so slowly that one of the guards succeeded in catching the van and applying the brakes; it was, however, already too late. The velocity was greater than the brake-power could overcome, and the seventeen carriages kept descending more and more rapidly. Meanwhile the third train had reached the foot of the incline and began to ascend it. When its engineer, on rounding a curve, caught sight of the descending carriages. He immediately reversed his engine, but, before he could bring his train to a stand, they were upon him. Fortunately the rear-ranks of the detached carriages, though insufficient to stop them, did reduce their speed; the collision, nevertheless, was terrific. The force of the blow, so far as the advancing train was concerned, expended itself on the locomotive, which was demolished, while the passengers escaped with a fright. Not so those in the descending carriages. With them there was nothing to break the blow, and the two foremost of them were crushed to fragments and their passengers scattered over the line. It was shortly after midnight, and the excursionists clambered out of the trains and rushed frantically about, impeding every effort to clear away the debris and rescue the injured, whose shrieks and cries were incessant. The bodies of ten persons, one of whom had died of suffocation, were ultimately extricated from the ruins, and twenty-two others sustained fractures of limbs.

At Des Jardines, the couplings were too strong; at Port Jervis and at Helmshere, they were not strong enough; at Car's Rock, they gave way not a moment too soon. "There are objections to a plenum, and there are objections to a vacuum," as Dr. Johnson remarked,—"but a plenum or a vacuum it must be"; but there are no arguments in favor of railroad-stations or sidings upon an inclined plane. Abergele was one illustration of what soon or late must result from them, and Helmshere was another. In railroad-mechanics there are after all some points susceptible of demonstration. That they should still be ignored, is hardly less singular than it is surprising.

THE FALLEN EMPIRE.

Hispanis, glorious, great, and grand, in other days,—
Who nobly bared your breast against the Moslem's savage blows,
And struck for God and Man when madly glared the battle-blaze,
On sea and land, between you and your unbelieving foes,
Until your valor broke at last the soul-degrading thrift
That shrinks and has stretched across the Old World's fairest lands;
Then sent your victory-flashing flags across the Western Main,
And found a New, another World, to give to Christian hands:
O land of holy-glow glory! why did you not the lesson learn,
When in the race of nations proudly stood you in the van,
That only States continue grand, sublime, and strong, that spurn
To shape their course upon the wrong, the narrow, the mean?
That binds in poverty the *millions* down to raise the *few*?
Behind was Rome with warning voice: her eagles, well you know,
Had soared in triumph over nearly all the Eastern World;
And how her leading minds, forgetting what to *all* is due,
Looked each to *self*: ah! quickly, sadly, were her banners furled.
Your people's wealth, your people's blood, in vain
Were poured out on those new and savage coasts, o'er which the star
Of peaceful empire should have loomed, and shed its rays benign
On fading forest, rising spire, the forge, and lowing kine;
And then your fabled El Dorado, sought through war in vain,
You would have found in fields of happy progress,—not of slain.

CHICAGO, Dec. 3. H. N. MAGUIRE.

Its Effect on the Brain.

Long before the era of temperance ordinances and organizations, Hyrtl, by far the greatest anatomist of the age, used to say that he could distinguish, in the darkest room, by one stroke of the scalpel, the brain of the inebriate from that of the man who lived soberly. Now and then he would congratulate his class upon the possession of a drunkard's brain, admirably fitted, from its hardness and more complete preservation, for the purpose of demonstration. When the anatomist wishes to preserve a human brain for any length of time, he effects that object by keeping the organ in a vessel of alcohol. From a soft, pulpy substance, it then becomes comparatively hard; and so, too, before death, the use of alcohol causes the induration of the delicate and gossamer-like tissues.

TENEMENT-HOUSES.

A Pest from Which Chicago Is Not Exempt.

A Close Inspection of a Poverty-Stricken Section.

Collection of Ignorance, Children, Foul Smells, and Disease.

How People Live in These Nurseries of Pestilence.

A Workingman at His Dinner.

The real extent of wretchedness and poverty existing in Chicago is not generally known by the well-to-do classes. The gentlemen and ladies in the upper walks of life are too deeply immersed in professional and social pursuits to bestow more than a passing thought at rare intervals upon the thousands of hungry wretches who inhabit the by-ways of this city, and whose career begins in sorrow, and ends in vice. As to business men, they are even less acquainted with the habits and conditions of the poor. Conditions are not in their line. They deal with particular persons and things, but not with generalities. Their business is to buy and sell, whether the merchandise be land, calico, or brains, and all beyond that is fanaticism.

THE CONDITION OF THE POORER CLASSES

is, however, a subject that deserves the attention and consideration of all good citizens. If there is comparatively less poverty and crime here than in other cities, the fact, as well as the reason therefor, should be known; if more, then it should be all the more widely known. The collection of figures upon this subject is rendered unusually difficult, owing to the fact that the districts populated by these classes are scattered all over the city. The North, West, and South Sides all have their share. Nor are they confined as a rule to certain streets, but exist all over. It is true that there are a few localities where more than in others the poor folks congregate. As the wealthy have their Michigan, Calumet, and Ashland avenues, so the wretched have their String and Larrabee streets. Yet in the latter case the rule does not strictly hold, for often the lowest and most miserable hovels are set amid houses of comparative comfort and respectability.

THE WEST SIDE,

containing as it does nearly two-thirds of the resident population, naturally comprises the abodes of a greater portion of the lowest classes. There are numerous districts which are given over almost wholly to thieves and desperadoes. There are others still more forlorn in appearance where are huddled together that large body of persons who come under the "poor but honest" category. They comprise the families of men who work for a living whenever they can get a chance, and when they are out of work, which happens often, they eke out a miserable existence, aided occasionally by the public institutions of charity. To them the County Agent is a somewhat mythical angel, who appears at rare intervals of dire extremity, and doles out the food necessary to sustain life.

THE WINTER SEASON

is always a time of the greatest hardship to these people. Their earnings are less than during any other portion of the year, and their necessary expenses greater. Fuel and clothing become essentials, whereas during warm weather they can get along very comfortably without either. Much suffering is the consequent.

At the present date there are large numbers of these people who are without employment, and who will be obliged to ask relief of the county