

*Arnold (E.)* *Bot*  
ON MEDICAL PROVISION FOR RAILROADS

AS A

HUMANITARIAN MEASURE,

AS WELL AS A

SOURCE OF ECONOMY,

TO THE

COMPANIES.

READ BEFORE THE STATE MEDICAL SOCIETY.

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## MEDICAL PROVISION FOR RAILROADS.

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WE live in an age when calls upon the public in aid of suffering humanity are seldom disregarded. A need may not be immediately recognized, but, once perceived, there are always found in the community actively benevolent minds, who with heart and purse betake themselves to the task, and resolutely and energetically keep the public mind alive until the desired object is attained. In how many noble institutions have these efforts culminated, institutions for the aged and infirm, for deaf-mutes, for the blind and the lame, reformatory establishments of various kinds, as well as noble hospitals both for general and special purposes. Then, again, our coasts are well supplied with life-boats, or mortars to send a rope to the rescue of a perishing crew; well organized fire companies are ever on the alert to guard our lives and property from the ravages of fire—would that I could add they were well supplied with fire escapes, for the benefit of our over-crowded tenement houses, too often limited for egress to a single narrow staircase—and hundreds, I might say thousands, have been saved from a watery death by the active exertions and widely circulated regulations of the Humane and similar societies. With institutions so numerous and so varied, one might readily believe that provision was already made in one way or other for every class of victims to sudden casualty; yet, with all this, there is still a great and pressing want to be supplied, an evil of gigantic proportions yet to be grappled with, one not only of a deeply interesting character to our profession, but of such vital importance to the traveling public, that we may well wonder it has never yet attracted attention.

Within the last half century our mode of land transit has been entirely revolutionized. The old stage coach has gradually given way to the railway engine with its thundering train of cars. A vast network of railroads spreads itself out over the land, bringing the most distant points within easy reach of each

other, and by the cheapness, speed, and, in the main, safety of the mode of travel, inducing tens of thousands, who probably under the old system would never have found themselves at any period of their lives ten miles away from the house in which they were born, to now traverse the continent without a thought of inconvenience or danger.

Let, however, the iron horse, usually so tractable to human guidance, be but for a moment interfered with in its course, and it becomes a crushing, tearing monster, breaking and splintering cars, scattering their mutilated occupants around in all directions, and giving to the ground the appearance of a recent battle-field. It is useless to say that all this is unnecessary and may be avoided. Apart from accidents arising from carelessness of employees, or neglect of regulations, or signals, or switches, leading to collisions, to driving trains through open drawbridges into the river beneath, or to running cars off the road and over precipices by too great a rate of speed on heavy curves, there are numerous unlooked-for causes of disaster, among which may be enumerated, the straying of cattle on the track, the loosening of a rail, breaking of an axle, springing of a wheel from frost or defective casting, the gradual undermining of an embankment by water, the falling of a piece of rock on the track just previous to the arrival of a train, and many other causes, that will occur to our minds on reflection ; so that while all that human forethought, care, and well devised regulations can do has been tried, we nevertheless are every now and then startled by the ominous heading in our newspapers of "Fearful Catastrophe" on this or that railroad, followed by harrowing details, and terminating in a long list of killed and injured. Nor is it only by these great accidents that life and limb are jeopardized ; still more numerous are the cases of individual injury to passengers, employees or others, arising, it is true, from want of care or thoughtlessness on their own part, yet none the less deserving of sympathy and of our best efforts in their behalf.

Public attention having never yet been fairly directed to this matter few are aware of the magnitude of the question under consideration. By the kindness of a friend I have been supplied with a copy of the Report of the State Engineer for the year ending September 30, 1860, from which I may here be allowed to make one or two extracts. A comparative statement for the years 1856 to 1860, inclusive, a period of five years, of railroad accidents on thirty lines of this state, furnishes the following facts :

	PASSENGERS.		EMPLOYEES.		OTHERS.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1856,.....	18	78	48	18	107	27
1857,.....	11	36	47	26	65	33
1858,.....	20	142	29	25	67	46
1859,.....	10	33	28	24	81	48
1860,.....	13	36	28	17	111	45

Making a total of six hundred and eighty-three killed, and six hundred and twenty-four injured, or thirteen hundred and seven in all, an average of two hundred and sixty-one per annum. Many of the above railroads are short lines, and easily supervised and kept in order, so that serious accidents are comparatively few in number, while five of them are mere city roads, the cars being drawn by horse power. I will therefore take five of the leading roads, with a total length of thirteen hundred and thirty-eight miles, and give the numbers killed and injured thereon in the above five years :

PASSENGERS.		EMPLOYEES.		OTHERS.	
Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
47	223	139	68	342	121

Making a total of five hundred and twenty-eight killed and four hundred and twelve injured, or nine hundred and forty in all, an average of one hundred and eighty-eight per annum. Most of the above railroads lie mostly within the state, and there are on the whole few, if any, to be found better managed, while many in other parts will certainly ill compare with them either in construction or management. To consider this question in all its magnitude we should extend our inquiry to lines in other parts of the Union and to other countries, but for all present purposes to deal with our own state is sufficient.

What an awful sacrifice of life, in part at least unnecessary, what a fearful amount of human suffering the above figures cover! When we speak of so many killed, it is not thereby meant instantly killed; fortunate, indeed, are they in comparison with those allowed to sink and die in a few hours from the

total absence of everything requisite to meet their condition, or to give them a chance of life. We know, to a certainty, that every now and then a terrible accident will occur, though we cannot fix either the time or the locality; we know also, that, where it does occur, there is not a rag on hand to staunch a bleeding wound, there is not a single appliance within reach of any medical man, who might happen to be in the cars, to enable him to render effective service, and this leads naturally to a very important part of my subject, namely, that of immediate management of the injured, under the present system, or rather under the want of it.

I think it will be conceded that, taken as a whole, railway casualties may be regarded as about the most fatal that surgeons meet with, and as they occur often in out of the way places, much valuable time, even under the most favorable circumstances, is lost before they can be put under efficient permanent treatment. Leaving out of the question those instantly killed, among the injured who die within a short period, many will be found whose injuries would not be likely to prove fatal under other circumstances, but in whom intense excitement, in addition to the injury, is followed by rapid and fatal prostration. In others again, whose injuries are more severe, and perhaps accompanied by much loss of blood, the collapse is proportionally severe from the commencement, and they sink before assistance can be obtained, or when they get it are so far reduced that the case has become hopeless. In the former class patients should be at once removed from the scene of excitement, and prompt measures taken to allay nervous irritation, as well as to encourage them by letting them feel and see that they will be almost immediately well and efficiently provided for; in the latter hemorrhage, if present, should be arrested, means taken to promote reaction, and the sufferers placed in the least painful position, until a station is reached, where they can be attended to. Are these things done? I think the answer generally must be, no. Could they be done? I say, emphatically, to a great extent, yes. How, will be considered in another part of this article.

Among the recorded causes of individual injury are such as the following: Brakeman fell from train — leg cut off; engineer fell from engine — killed; passenger fell from platform while stepping from one car to another — limbs crushed; arm torn off by coming in contact with pier of a bridge while carelessly thrusting the member out of a window. Again, we read of persons with legs and arms crushed or cut off while crossing or walking along the track, and dying a day or two after. Now, let us suppose from some one or other of these causes, a leg is

crushed in a locality far away from any town. The train is stopped, and the sufferer is quickly surrounded by a curious and sympathizing crowd. Pocket-handkerchiefs are freely offered for bandages; and if he is a poor man he is deposited on the floor of the baggage car; if a passenger, on seats in the best way circumstances permit; sometimes, however, on the bare floor too. And so they go on; every jar or unsteady movement of the cars causing intense pain to the victim, until a station is reached, where he is deposited and left to ——, Providence or chance, as we choose to term it. The train pursues its way, and the temporary excitement is quickly forgotten. But let us return to the injured man, and see the case to the end. The nearest doctor is sent for, who, perhaps, when he arrives, does not know what to do, and promptly concludes that the patient will die; nothing can be done for him. Unwilling so to relinquish life, the sufferer sends for another, perhaps, from a long distance, who, on reaching the spot, proceeds to do all that is necessary; but too much time has been lost, and the result is chronicled in a couple of lines in some local paper, which attracts little attention, and finally he figures as one killed in the annual railway report. Let a great accident occur, by which a train is wrecked in a similar locality, and what a terrible scene of confusion presents itself. Doctors are sent for in all directions, good, bad and indifferent; and ere now, a whole hospital staff has been telegraphed to proceed to the scene of disaster. They cannot leave their duties, and assistants are sent, of course. Every one goes to work upon his own responsibility; the want of previous provision, of system and proper management are painfully felt, and loss of life and limb, and heavy pecuniary damages to the company, are the result. I do not mean to say that matters are always as bad as here represented; but I do assert, that when they are not, it is owing to accidental favoring circumstances rather than to proper provision; and that our present arrangements are not such as the claims of humanity imperatively demand at our hands.

As cases of personal experience must be necessarily limited, I must request to be allowed to quote one or two, already published in a small pamphlet, written by me, rather with a view to break ground on this important question than as a full exposition of it. On the 18th of January, 1860, a way train ran into an express train, stationary on the line; the cause recorded, being want of attention to signals, killing four, and injuring six persons. Among the former was a lady, who died in our village the same evening. Having, in the former article alluded to, quoted this case somewhat incorrectly, I will now give the testimony of a very competent physician on the inquest, copied

from one of our local papers, which I have been fortunate enough to obtain. He says: "I was with Mrs. F—— from the time she was taken out of the wreck until she died; there was a compound fracture of both bones of the left leg, and a lacerated wound on the upper and internal part of the thigh; there were also bruises about the head, and on the left arm, but not, as I considered, dangerous; I suppose the cause of her death to have been primarily the nervous shock to her system with its consequent depression; and, secondarily, loss of blood; there was no evidence of internal injury sufficient to cause death; little was done for her beyond administering stimulants; all was done that I deemed proper, except that she should have been placed in a position to have received more speedy attention; I advised her being left at Tarrytown, the first stopping place, but it was thought best, by those who had her in charge, that she should proceed to New York so as to be among her friends. She was finally taken off at Yonkers, and died about 7 o'clock in the evening." Here we have the whole matter. Everything was done that was deemed proper by a talented practitioner, *except* that she should have been placed in a position to receive more speedy attention. Here is the origin of a vast amount of mortality; here is the very thing that first suggested to my mind years ago the necessity for some special provision. In this case, the shock to the system was very severe, but could hardly have been greater than in the one I shall presently contrast with it; and the actual injuries were far less in amount.

Now, had the sufferer been gently removed to the nearest town or flag station, and her necessities promptly attended to, instead of time being lost, and carrying her on from place to place, a downward impetus being thereby given to already depressed and rapidly failing vital powers, might not the result have been different, and not only a valued life saved, but liability on the part of the company to the highest amount of individual damages avoided?

By way of contrast let us take the following case: In October, 1857, a boy, eleven years of age, jumped out of the baggage car of an express train, at full speed, against the rocks, in a cutting, and, rebounding on the track, was picked up, horribly mangled. His injuries were as follows: The left foot and leg, from midway below knee completely smashed and in part torn away, fracture of the right thigh, compound fracture of the right leg midway below knee, both bones protruding, compound fracture of the right great toe, and a severe scalp wound of about three inches in length. When we add the fearful violence to the general system necessary to cause such a mass of injuries the case might well seem hopeless. He was quickly

removed to his parents' residence, and medical assistance promptly at hand. I had the satisfaction of discharging him sound, of course with exception of loss of one leg below knee, after four months' attendance. There cannot be a doubt that, had this boy been carried, in the usual way, twenty miles, to a distant hospital, he would have been added to the list of railway victims, and his death regarded as a matter of course, instead of growing into a fine, intelligent lad, and, supplied with a Palmer's patent leg, being actually employed, not long since, as a runner, by the New York agent of that valuable apparatus. In this case everything favored prompt attendance. The train was little more than a mile from the station, and at the moment of the accident another was coming up in the opposite direction which brought him back; carriages were in waiting for this due train, in one of which he was immediately removed home; another surgeon and myself were on the spot almost as soon as he arrived there, and, desperate as the case appeared to be, the saving of time proved to be the means of saving life.

In February, 1854, messengers came to the village, between 3 and 4, A. M., stating that the bridge at the creek had broken through, that a car-load of passengers was submerged and medical assistance needed. It was a bitter cold dark morning. I hastily gathered all that I thought might be useful, and, after several times narrowly escaping a capsize in snow-banks, reached the spot. Matters were not so bad as had been represented. One engine had got safely across; the second, for there were two, had gone down with the express baggage car, in deep water, and the passenger car rested on the top of the latter, hanging half-way over the end of the broken track, thus allowing the few passengers to escape. Two scalded firemen had already been attended to. I made inquiries whether any others were hurt, but could learn nothing satisfactory, the employees seeming to regard me rather as an interloper than in any other light; I consequently started for the scene of the accident on the New York side. It was still dark, and on reaching the drawbridge, where the rail was laid along single timbers, which afforded the only means of crossing, these were so covered with ice that, after a few steps I found it impossible to get over without the greatest risk of being blown off on to the masses of ice below, so I turned and went home. I subsequently learned that I had been within a hundred feet of the express messenger, who would not leave his charge, and was suffering intensely from a sprained ankle, and for whose relief I might have done much, while assistance did not arrive from the city for several hours afterwards. Lucky was it for him that his injuries were no worse.

One more case and I have done with this part of my subject. Some two years since a man threw himself down under an empty passenger car on the off track and went to sleep. Meantime the train came along, backed up and took off the empty car, which went over both the legs of the sleeper who had not been observed. Here was a case at a station. I shortly after arrived and found him lying on the floor of one of the waiting rooms in the midst of a large crowd, with both legs fearfully crushed and bleeding profusely. What was to be done now was the question. Nobody would take him in for he was but a poor loafer, and certainly nothing could be done where he was; the only alternative therefore was to staunch the bleeding, and as a train was soon coming up, he was bundled up in the best way circumstances permitted, and so sent as usual in the baggage car to the City Hospital with a result easily foreseen. His chances of life were perhaps but small, but even that little was denied him, and he died almost as soon as he arrived.

These cases which might be multiplied *ad infinitum*, those occurring in one place being only repetitions of what takes place in another, go far to prove that none of our present institutions are sufficient to meet the peculiar wants of the injuries under consideration; that as many sink from shock and from the length of time that elapses before they are subjected to treatment, half an hour or an hour often determining the question of life or death, it becomes the imperative duty of the railroad companies, as well as their interest from the great pecuniary losses they are subjected to, to make some special provision adapted at least to relieve the immediate pressing necessities of those who may be injured on their lines, and thus place them in a condition for future successful treatment.

Having arrived thus far I think it is made sufficiently apparent, that the present state of things involves injustice to the public as travelers, who are all equally liable to injury; injustice to the public again as stockholders by the amounts wasted in litigation or damages for real or spurious injuries, and in this the widow and orphan, whose little means are invested, are as much interested as the merchant and capitalist; injustice to the injured, who cry in vain for help when it is most needed; and, finally, injustice to our profession, whose members have too often to give their time, labor and skill gratuitously, and I may here observe, that in all the cases of this class I have had to do with, I have but in one received any remuneration. *We* may not ignore the claims of humanity, nor do we wish to; but to that public, on whom after all the great burden of the wrong falls, I say: do also your part in satisfying those claims, strengthen our hands, give us needful appliances and conve-

niences, thus enabling us to use whatever skill we may possess to the best effect, and while we shall still gain little pecuniarily, you will be gainers in every way, you will mainly reap all the benefits.

Assuming the necessity for medical provision for railroads as established, I shall now proceed to develop practical plans for the accomplishment of this object. It is clear that the appointment of a surgeon, or a corps of them, at the main termini would not avail, nor would it answer to appoint paid surgeons on the line, who might never be employed. It must be borne steadily in mind, that our object is not to make permanent provision for the injured, though it may be used as such when desired, but merely to bridge over that fearful and fatal gap, which intervenes between the time of the infliction of the injury, and that when the sufferer can be handed over to the surgeon of his own choice; thereby affording to the latter as good a chance of curing his patient as though he had taken possession of him from the first moment. To meet on the one hand the requirements of the case without infringing on the just rights of companies on the other, the provision must be *sui generis*. An accident may be recorded in one locality this week, the next may occur a hundred miles away, yet the same provision should extend equally to both without subjecting the respective companies to unnecessary expense. Such is the problem to be solved. I propose to consider the question under two heads: first, by arrangements along the line; secondly, by arrangements in the cars, by one or other of which, or by combinations of both, we can effectually secure the desired end on every railroad in existence.

First, then, as to arrangements along the line: and here I shall again avail myself of what I have previously written. Let each company appoint at its main terminus a medical inspector, with the rank of assistant superintendent. The duties of this officer would be to organize the line into districts; to issue medical regulations, with sanction of the general superintendent, to whom he would be subordinate; to receive and collate reports; and to act as medical adviser of the Board of Directors in all pecuniary and other transactions with their district surgeons, to be presently mentioned. His duties would be of a confidential character, and he should be entirely in the interests of the company. His functions being multifarious, he should be a salaried officer; but as his duties would not interfere very materially with the requirements of private practice, his salary need not be a large one. Now, where an accident occurs, every railway servant is willing to assist, and does the best he can—often, however, acting very injudiciously for want of knowing

better : one of the first duties, therefore, of the inspector, after organizing his department, should be to issue a simple code of directions to station-masters and flagmen, instructing them what to do previous to the arrival of a medical man in cases of accident. For instance, if a person is bleeding from a wound, the employee should be directed and shown how to apply a pad and bandage; and so a man may be saved from bleeding to death. If the sufferer is pale and chilly, with cold extremities, the railway official should be instructed to make a bed on his stretcher, to heat a brick and put it to the feet, also to administer a little warm tea at intervals, thereby often saving a man from sinking to death; and when a medical man arrives, instead of having to abandon the patient as a hopeless case, reaction may be commencing affording encouragement to bestow his most strenuous efforts, or the powers of life may be so far restored that he can decide and act upon the necessary treatment at once. So much for the duties of the inspector.

In the next place, let the companies appoint district surgeons, unsalaried, but payable for actual services rendered, at the principal towns along the line, and not exceeding from ten to fifteen miles apart—the district of each to extend to the flag station nearest to midway between any two. The principal advantage attending such regular appointments would be that, where medical assistance was not immediately at hand, the employees would know exactly where to send for a competent practitioner. At each such surgical station a small room should be set apart on the ground floor, furnished with an iron cot bedstead and bedding, a stretcher with mattress and pillow, a small table, one or two common chairs, and a small wood-stove, by which, if required, the room could be heated in a few minutes in winter, or hot water or a brick for application to the feet at any time. I may here observe that, if the companies did their part, I have no doubt each surgeon could raise among his own friends and patients not only enough to furnish the main station, but also to provide every flag station, with a stretcher and mattress to be kept always ready for use. The surgeon might also keep at the station a little linen, lint, bandages, sponges, a few splints, and such minor articles, for immediate use. He should also make it a rule to carry a tourniquet. In case of an accident, a stretcher and bed could be obtained from the nearest flag station, or those from the adjoining ones if several were seriously hurt, and the medical officer summoned, also those of adjoining stations if necessary, as well as any competent medical men in the vicinity. If an injury were too severe to risk removal, the patient could be carried to the nearest flag station until the immediate danger had subsided; where practicable, however,

he should be carried to the district station, his immediate wants there attended to, and provision made for safe removal. When a surgeon is summoned to the scene of an accident, he should have the right to avail himself of any passing train, that as little time as possible might be lost; and it should be his duty to examine carefully into the amount of injuries sustained, and to keep notes of the same for future refreshment of his memory; also to furnish a copy to the inspector, to be kept on file at the chief office. In cases of fraudulent or exaggerated claims upon companies, their medical officers would become most important witnesses; and I believe the amount thus saved would far exceed all costs, and tend greatly to diminish litigation.

By such arrangements if a person were injured severely on the line, passenger or otherwise, he would be laid on a comfortable mattress, his limbs arranged in the position affording most comfort, and so be carried by hand on a stretcher into or out of the cars without further disturbance until he reaches his destination. If several were injured, messengers might be sent to the adjoining flag stations, or the engine and tender detached thither; and so, in a short time, beds would be brought to the spot, and our first great need supplied. If any medical men were at hand, they could at once render valuable assistance; meanwhile, the district surgeon would be sent for, who, on his arrival, would take authoritative charge, and promptly and efficiently proceed to do whatever could be accomplished by a surgeon of skill and judgment. System and order would work out their natural results, suffering would be diminished, and life oftener saved. With the general introduction of such a system, we should have heard of the last of a railway victim, with reaction approaching and returning circulation, awakening, perhaps, after a twenty miles' ride, to intense suffering with the hard floor of a baggage car for his bed, a coat rolled up for his pillow; then having to endure the almost insufferable agony of removal, with broken limbs dangling or awkwardly handled to a carriage; and from thence once more, with powers now for the second time prostrated, to the bed, from whence he is never destined to rise again.

The above plan would be very well suited to such a road as the Hudson River Railroad, where there are flag stations at almost every mile, and where important towns are near together. Many of the lines, however, run through thinly populated districts, with long distances intervening between stations and flag stations. Here, our apparatus would not be sufficiently accessible; and we need, therefore, some slightly different provision. This must be furnished by appliances in the cars themselves. In many of these, there is at the end a small portion partitioned

off, and containing a couple of seats. Remove these, and we have all the space we want. With three or four stretchers and mattresses, with proper bed furniture to match, a dozen yards of ten cent muslin to make rollers, a little linen and lint, a couple of rolls of cotton batting, a yard of strapping, a few square feet of thin hard pine, a small saw to cut it up with, a stone bottle for hot water, and a tourniquet or two, which any conductor can be easily taught to apply; adding, perhaps, a little brandy, a small bottle of laudanum, and one of hartshorn. We shall have provision, such as would not only allow a conductor to perform the first requisites, but to enable a moderately efficient medical man, should there be one in the cars, which is often the case, to put up a patient in a comfortable manner until he was in a situation to be placed under permanent treatment; or, at least, in charge of a district surgeon, who might live at a considerable distance from the scene of the accident. For instance, suppose a brakeman, or passenger, stepping from one car to another, fell from the platform and sustained a severe fracture, with other injuries; the conductor, if there were much hemorrhage, could apply a tourniquet. place him in a comfortable position on a mattress, apply a warm water bottle to his feet. and so carry him, with little disturbance, until delivered to the surgeon who was to treat him. If a medical man happened to be in the cars, he might, in addition, pillow the limb, or use splint or bandage. or administer restoratives, or an opiate, as the circumstances of the case warranted in his judgment. In other respects, the same principles and mode of proceeding would apply as heretofore laid down. The car, containing the above requisites, should be as near to the center of the train as possible, as least liable to injury. One or other of the above named provisions, or both combined, would suffice to meet the wants of every railroad in existence. In the case of short lines of railroad, not exceeding twenty or thirty miles, an inspector would be unnecessary, requiring only provision in the cars, and a surgeon at either end. Where a short line is leased to a great main road, the medical arrangements of the lesser would be merged into those of the greater.

Such is the basis I propose for a general system of medical provision for railroads. It would be out of place here to enter into the nature of the instructions and regulations that would issue from the inspector's office for the guidance of his staff, further than to say that they would probably resolve themselves into two kinds: first, such as might be suggested by the superintendent as necessary to bring the whole working arrangements of the line into harmony; and second, advisory as relating to new discoveries in science, new principles of

treatment, new appliances, or whatever may seem calculated to promote our efficiency as practitioners. An institution so extensive cannot be expected to start into existence in full perfection, though all our main ends will be secured from the commencement. After a little working of the machinery all asperities will be smoothed down, and a system as perfect and beautiful in all its parts as combined talent and skill can make it will soon result.

A word with regard to our profession. We shall here have a great number of intelligent professional minds enlisted and immediately interested in the work. From such many excellent practical suggestions will emanate, which gradually embodied into rules and regulations within the capacity of employees. will tend to perfect the general system and increase its efficiency. Should the medical officers of a line come together once a year bringing reports of cases and the results of their experiences, accustomed as they would be to treat desperate injuries, we might look for much tending to advance general professional knowledge. Whatever proved of eminent utility in one case would become the common property of all, and might at stated intervals be embodied in circulars, which would be interchanged with similar ones issued by the officers of other lines. In most neighborhoods efficient medical men will be found, there may however be some localities newly settled and sparsely populated where good surgeons, if any at all, are difficult to be found. In such places there are often influential men, who are selected as directors of the line, which passes through them. Let these look around, select from among the more distinguished young graduates of our great medical schools competent men for their district surgeons, give them enough of the family patronage and that of their friends to enable them to live at the start, and they will gradually become the consulting surgeons of their neighborhood, introducing a higher standard of local professional attainment, as well as helping to elevate and ennoble our profession in the minds of the people generally.

A few words must suffice, as not properly belonging here, with regard to the economy to railroads generally in adopting a system of medical provision. I have already alluded to the diminution of litigation, and check to fraudulent actions, by the command, on the part of railroads. of medical witnesses, who had been enabled to examine every injured person at the time of the accident. To this must be added the diminished liability of the companies, which will be in proportion to the life-saving efficiency of the arrangements proposed. In the statements of expenses for 1860, in the State Engineer's Report, we find under

the head of "Damages to Passengers," on the five railroads previously mentioned, the sum of \$50,706 (I omit cents), of which \$33,626 were paid by a single corporation. although only nine passengers were killed and forty-three injured; while another paid only \$12,366, with eighteen passengers killed and forty-three injured; a third paid \$1,241, with twenty passengers killed and forty-six injured; and again with a fourth. \$3,223 are registered against a company with no passengers on the killed and injured list. This part of our statistics therefore affords no uniformity in its results, as might be expected, where two or three years may elapse on a line without any very great accident, although when one of the latter does occur, the damages may amply compensate by their amount for the smallness of them in other years. Taking an average of the amount paid by the five alluded to previously, in 1860, it will be a little over ten thousand dollars for each. On some lines no accidents are recorded under any head. On sixteen lines where such have occurred, with a total length of 1,954 miles, the total amount of damages paid for injuries to passengers was \$60,725, a little over \$3,100 for every hundred miles of road. In other years of course the statements will vary, some paying more, some less. Some will meet with heavy accidents where none have heretofore occurred, and others will be comparatively free from them, which now figure heavily in the list. As with the advent of epidemics, there is no certainty about them, except that they will certainly turn up somewhere or other. Let them not find us unprepared.

Of the thirteen hundred and seven persons killed and injured, and heretofore alluded to. we find that six hundred and eighty-seven belonged to the companies, either as passengers or employees, while six hundred and twenty, or nearly one-half of the whole number, were persons unconnected in any way with the respective lines, and for whose injuries the companies cannot for the most part be held in any way responsible. They cannot, nevertheless, be overlooked in any humane endeavors for the relief of the injured. True, many of these are killed instantly by being run over or struck by the engine, but still a very large number remains, and this leads to the irresistible inference, that while the companies should be compelled to do their duty in this matter, there is also a large part to be performed by the public themselves, upon whose shoulders a portion of the burden should justly rest. Let, therefore, the railroad managers provide their stations or surgeons, paying the latter for the first dressing, at least, in all cases, and giving to all a share in their life-saving arrangements, whether connected with the line or not. Let, on the other hand, the public establish societies on

the same principles of benevolence as those for the saving of life by any other class of casualties, calling them Railroad Accident Relief Societies, or by any other name they please, whose object it would be to strengthen the hands of surgeons by furnishing stations and flag stations with needful apparatus, such as the stretchers, bedding and bed-furniture, splints, and those necessaries which no individual practitioner could be expected to possess in sufficient quantity to meet the requirements of a great accident. Of these the inspectors of lines might be made the distributing agents. As passengers and employees would share in the advantages offered thereby to others, the companies would thus get a fair *quid pro quo*.

When the companies have done all in their power, and as far as judicious regulations, and careful and vigilant supervision go, I believe they have, to ensure the safety of those who travel on their lines, and have further by proper arrangements done their best for the recovery of those who may be injured, thus making complete provision for every emergency in every department, they will have a good right to claim, at the hands of their respective legislatures, relief by the introduction of measures of limited liability. As the laws stand at present, I believe it is sometimes cheaper to kill people outright than merely to hurt them. They should not be made to pay more for lives saved than for lives lost. To railroad managers these propositions are respectfully submitted. Let them once take into serious consideration the question, whether the claims of humanity and the interests of stockholders are not entirely reconcilable in this matter, and the ultimate result cannot be doubtful.

To return to my legitimate sphere. I have in this paper devoted more space to the necessity for medical provision for railroads, than to the details of it; for, let but the truths I have here endeavored to lay down be established in principle, the necessity for action in the matter of railroad accidents be once fairly impressed on the public mind, and we may rest assured that, based either on my plans or some better ones, a great and noble institution will ere long start into existence; the result of which will be to save as much life, to alleviate as much suffering, as any one of the great benevolent institutions of the day. We must not, in this or any other new and great undertaking, expect perfection at the start. There will be many practical difficulties to surmount, requiring in any one who shall be entrusted with the task of putting the scheme into practical operation, talent, energy, and entire devotion to the work before him. We should have to decide exactly before going to expence what apparatus we would employ, and, in some instances, adopt new contrivances. Abundance of surgi-

cal apparatus we have; but bearing in mind that our arrangements are but for temporary purposes, that everything must be reduced to the smallest amount of space compatible with the object to be attained, as well as to be of the most portable kind; that cheapness, too, will be an essential matter, we shall have to look forward to many new and simpler appliances than those often in use in permanently treating a case. For instance, the most important piece of furniture would be the hand ambulance. Now, I think it would be easy to construct a thing of this kind, which, folded up, would form a simple flat stretcher; by legs dropping from the sides, it would form a bedstead; and by curtain posts, that might be raised up from either end, the curtains being usually kept folded under the mattress, convertible into a covered hand ambulance; so that from the moment a patient was taken up and laid on the stretcher, whether he were conveyed to a station, or put into a car or carried through the streets, he would never have to be disturbed from his original recumbent position until placed under the care of the surgeon destined permanently to attend him. In this, and similar matters, with able inspectors, willing to listen to every suggestion, yet capable of sifting the chaff from the wheat, and determined to adopt nothing that was not thoroughly practical, as well as reasonably economical; with a large body of able practitioners associated directly in the work, and the general intelligence of the whole mass of the profession to guide and assist them, all obstacles, as far as our part was concerned, would be easily surmounted.

I had now arrived at the concluding paragraph of my paper, when I received an important communication bearing immediately on the subject in question. Singularly enough, while I was working out the above details, another gentleman was preparing a great and comprehensive measure now ready to go before the legislature with the sanction and support of most of the leading Railroad Presidents, as I am informed, and of which this very medical provision forms an essential feature. It is only within the last few days that either party has been aware of the proceedings of the other, yet the two measures dovetail into each other exactly, the one clearing away all financial difficulties, the other supplying a basis for the proposed surgical attendance. I am permitted to give an abstract of the proposed measure.

It provides for the Association of the Railroad Companies of the State, the same to be a "body politic and corporate," managed by a "Board of Managers," consisting of the Presidents or such other officers of the associated companies as may be designated by the respective companies and the President of the

Association, who shall be a citizen of the State of New York and not an officer of any railroad company.

This association shall make up a guarantee fund of \$100,000, chargeable upon each road pro rata as to its passenger traffic, and to enable the association of railroads to meet casualties the respective companies shall, in their discretion, be allowed to charge one-half of a mill per mile to every passenger in first class cars, or one cent for every twenty miles or distance within it in addition to the usual fare. In return for this, each passenger is guaranteed, in case of death, \$5,000 to his heirs, in case of loss of a limb, or an incurable injury seriously interfering with usual occupations, \$5,000, and for other injuries in proportion, to be hereafter definitely laid down. Surgical stations are also to be furnished along the line of the road and competent surgeons appointed to attend them when required. This done, the railroad companies associating are to be exempted from all further liability on account of any accident to passengers. At the end of each year whatever remains of the associated fund, after paying all expences, shall be divided into two equal parts, the one to accumulate until a permanent fund of \$100,000 is created, the other to be equally divided and paid to the trustees of four hospitals, two in the eastern and two in the western part of the State, they undertaking in return to treat gratuitously whatever cases of injury may be sent to them from the railroads. When the \$100,000 fund is completed, then the whole surplus will go to said hospitals. Thus whatever is obtained from the public will be returned to the public. It might be urged that companies, by such a measure, would be relieved altogether from pecuniary liability and might become careless. To obviate this, a sort of reward and penalty clause has been introduced. It provides that on an accident occurring on any road, the company shall be fined to the extent of one-third of the amount to which it has rendered the associated fund liable. This fine is to go into a special fund, which, at the end of the fiscal year, is to be divided pro rata as to their contributions to the casualty fund, first charging the respective companies to the extent of the one-third of the claim made by their road on the associate fund. Rewards and penalties are here set forth of the highest importance as securing care and proper equipment on every road of the association. Companies not meeting with any accidents will thus be absolute gainers, while those with whom they occur, not only lose the amount to which they are fined, but have an equal amount deducted from them in their share of general distribution.

It appears to me that, by these measures, based upon principles of life insurance, substantial justice is secured to every

class. The parties most interested are those who travel, the proposed arrangements being mainly for their benefit; and as, in case of accident, not only will they be more speedily and efficiently attended to, but, as damages will be promptly paid without recourse to expensive litigation, they ought not to complain of the slight tax necessary to secure these objects. The whole measure, which is long, appears to be drawn up with great care and precision, and to be based upon the soundest calculations. For the sake of humanity, let us wish it success.

In view of the fact that the question of medical provision for railroads is about to come up before the Legislature of the State in a measure thus large and comprehensive, would it not be desirable that this Society should take some action in the premises by a petition to the Legislature setting forth that, in the opinion of this body, great suffering is entailed and much loss of life and limb incurred by the want of medical provision calculated to secure more speedy and efficient attendance on persons injured by railroad accidents, and praying that the legislative body will either originate some measure or take into their earnest consideration such as may be brought before them bearing on the subject, in order that thereby the desired object of proper medical provision for railroads may be ultimately secured by such legislative enactments as in their wisdom may seem proper. I am not in the habit of drawing up petitions; but by such a one, you would, and none could do it with more propriety as representatives of the great medical body of the State, without interfering with functions not properly belonging to you, be the first to step forward as promoters and pioneers of a great and humane movement.

In conclusion, when our object shall be finally attained, we have only to do our whole duty, leaving the rest in the hands of an all-wise overruling Providence. Successful, we shall carry joy into many a household that might otherwise have been made desolate: should it be differently ordered, though we fail to save life, we shall not fail to diminish suffering; the last moments of the unfortunate sufferer will not be embittered by unnecessary torture, and what can by possibility be avoided is unnecessary; while to sorrowing and perhaps distant relatives there will be afforded the one source of consolation that all had been done by wise precautions and humane provision, as well as by practical sympathy and professional skill, that could reasonably be looked for in an enlightened and Christian community.

YONKERS, *February 1, 1862.*