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The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are *sharp*, the articles *short*, and the facts *authentic*, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

SLAUGHTER IN WAR AND PEACE.

We have before us the casualty lists of that greatest of all fields of carnage—the railroads of the United States. Lest the gentle reader should object to our phraseology, calling it sensational, we ask his attention to the Interstate Commerce Commission statistics of deaths and injuries for the last three months of 1906, which opens with the following statement: "The number of persons killed in train accidents during the months of October, November, and December, 1906, as shown in reports made by the railroad companies to the Interstate Commerce Commission, under the "accident law" of March 3, 1901, was 474, and of injured 4,940. Accidents of other kinds, including those sustained by employees while at work, and by passengers in getting on or off the cars, etc., bring the total number of casualties up to 20,944 (1,430 killed and 19,514 injured)."

At the above rate, the total number of people killed on the railroads in twelve months would be 5,720, and the total number injured 78,056, or a total of 83,776 casualties in a single year. If we remember rightly, this is more than twice as many as were killed on the British side during all the years of the Boer war; while the total number of injured exceeds the total number that were wounded by bullet and shell. But such wars as the South African trouble come intermittently and with decreasing frequency, whereas the casualties of peace are with us always and increase with the passing of the years.

The deaths and injuries on our railroads, appalling in number though they be, represent after all but a fraction of the total number of casualties occurring every year in the prosecution of the so-called arts of peace. The mine, the quarry, the smelting furnace, the mill, the machine shop, all present an annual death and casualty roll which, according to the most eminent authority on the subject in this country, Dr. Josiah Strong, is placed at the stupendous figure of 525,000. The railway accidents and their appalling results are more in the public eye than other disasters, for the reason that practically every citizen travels on the railroads, and that the government collects and publishes the statistics of deaths and injuries. But the grim facts regarding the frequency of deaths and injuries in pursuits other than those identified with railroading are just as real, just as shocking, and every whit as disgraceful to our national good name as those relating to the railroads.

Now, on the basis of over half a million industrial accidents in the United States in a single year, it may be stated that one person out of every 150 is sacrificed in a greater or less degree, ranging from a slight injury to death itself, in the task of carrying on our great industrial works. And the pity and shame of it all is that a large proportion of this pain and death is easily preventable. Two things are necessary: first, the public must be awakened to the realization of the disgrace which such a condition of things puts upon the nation, and to a realization of the vast amount of personal loss and suffering which these figures represent; and secondly, they must be taught that, by the enactment of proper ordinances governing the safety of life and limb, and the provision of proper devices of a mechanical kind, it would be possible, in a very few years, to reduce the casualty list by probably not less than fifty per cent.

But after all is said and done, it is a question whether the cause of this ghastly sacrifice is not to be found in our national disregard for the sanctity of human life. It is not in the least exaggerating the question to say that there is greater concern shown in the more advanced European countries over the accidental death of a single individual than is displayed in this country over the death of a dozen people by accident. It is certain that until we have learned "how much a man is better than a sheep," and have acquired a decent regard for the sanctity and dignity of life, we are not likely to make much headway in the provision of means for the prevention of accidents. One of the best ways to promote a proper understanding on this subject would be to pass laws making it obligatory upon the part of all great industrial concerns to report every accident, big or little, to a commission which was qualified to gather such statistics. These statistics should be regularly made public, and should form the subject of persistent comment by the press, in the pulpit, upon the lecture platform, and by means of systematized pamphlet distribution.

We can conceive of no other philanthropic movement that would be so worthy of the use of the name and the millions of such of our capitalists as are of humanitarian bent as this. If the prevention of the comparatively small and intermittent slaughter of war is worthy of a peace palace in Europe, and of a peace congress in the United States to which representatives are invited from the four corners of the earth, surely the abolition of the "carnage of peace," whose victims outnumber those of war immeasurably, should command an even larger liberality and an effort more sustained.

SPEED INDICATORS ON LOCOMOTIVES.

Certain recent accidents in this country and abroad point clearly to the necessity for the use of speed indicators on locomotives. Two fatal derailments which have occurred in England were due to the engineers running their trains around curves at speeds greatly in excess of the schedule; and the two most notable derailments of the past few months in this country also occurred on curves, and probably in each case they were due to the same cause. The use of speed recorders is quite general on European railroads, and we believe that on some systems they are in universal use, being considered as indispensable to the safe operation of the trains. Though occasional experiments have been made looking to the adoption of this device in the United States, we believe it is a fact that there is not a railroad on which it has been officially adopted. The present practice is to depend upon the judgment of the engineer, who is supposed, by virtue of his long experience, to be able to tell very closely at what rate of speed his engine is running at any particular time. No doubt, the more intelligent and observing of the engineers do acquire a sense of speed which is remarkably accurate; but it is evident that this will vary greatly with the temperament and intelligence, and that there must be some, and possibly not a few, engineers, who are incapable of making any accurate estimate of speed.

We are largely the creatures of custom and habit. Because we have so long done without speed indicators, we have settled down to the belief that they are unnecessary. And yet, a little sober thought should convince us that this device is, in its way, just as useful and almost as necessary as the steam pressure gage or the vacuum gage. Particularly is it needed on a road which is full of sharp curvature and crowded with crossings, turnouts, and sidings, at many of which a reduction of speed is called for. Even in the case of a train like the Empire State Express, there will probably be not less than half a dozen points on the 140-mile run to Albany, at which the engineer is called upon to slow down from the average running speed of, say, 65 miles an hour to speeds of from 40 miles down to as low as 15 or 20 miles an hour. With an accurate speed register before him the engineer could reduce to the exact speed called for on any particular stretch. The device would be specially useful in cases where the engineer was new to the division, and, therefore, more or less unfamiliar with the run.

Unquestionably, the introduction of speed indicators would be greatly facilitated if there were more of these devices on the market that were absolutely reliable. Too many of the present types are either uncertain in their action, or are so sensitive (that is to say, are subject to such violent oscillations above and below the true reading) that a prejudice has been raised against their use which may require some little time to overcome. Without disparaging the work that has been done already in this direction, it may be affirmed that this is one of the most promising fields to which inventors can direct their attention. The ideal indicator would be one which combined quick response to changes of speed and steadiness of pointer on the index with simplicity and durability of mechanism.

SINGLE-SERVICE PAPER MILK BOTTLES.

Butter is received in tubs and cut into blocks and put into neat paraffine paper boxes; lard is also so handled; oysters are dipped from a tub into neat paper pails; ice cream is sold in paper buckets; eggs are delivered in cellular boxes holding a dozen or half a dozen; chipped beef is delivered in paper boxes, etc. And yet milk, the article of food most susceptible to contamination, is served in bottles which are used again and again. This is vitally wrong. There is too much risk in it. The bottle may be put to too many improper uses. It is not uncommon for the driver of a milk wagon to split a quart of milk into two pints, cap the bottles, and leave them where customers have requested additional pints. This split quart is divided between two unwashed bottles. It is not to be expected that the driver will return to the dairy for clean bottles.

To wash milk bottles clean is difficult, often very difficult. It cannot be done except in boiling hot water. But the men cannot work in boiling water, and so lukewarm or tap water is used, and they do the best they can. Many dairymen have not hesitated to invest large sums of money in the latest and best apparatus obtainable. This is a help, but not the cure. The refilled bottle is an anachronism.

Evidently the glass bottle is a misfit, and wrong. The solution is the abandonment of it, and the substitution of the single-service paper package for milk. These are now just beginning to be available, and many are the incidental advantages they will bring. They do away with innumerable troubles for the milkman.

One of the first paper bottles to be placed on the market is a plain paper cylinder, having a flanged bottom securely fastened therein, and a flanged top held in by frictional contact with the inside of the tube. The lid is provided with tabs folded down inside the flange, by which the cap may be readily removed, although some customers prefer to have the cap more difficult to remove, as a further guarantee that the contents of the bottle have not been tampered with *en route*.

The bottle is made of new spruce-wood paper in clean, sanitary surroundings. After the bottom is put in the bottle is dipped in hot paraffine, the same paraffine the housewife pours over her jellies to keep out the air, moisture, and dust. The bottle is then passed into a sterilizing oven, where it continues to absorb paraffine to saturation, the excess draining back into the dipping tank. The caps are then put in and the bottles packed in paper bags holding a hundred each and the bags sealed, so that the milkman's wagon is laden only with bottles clean and perfectly sanitary.

The bottle weighs less than an ounce, but by reason of its cylindrical construction, with the caps inside, is quite strong. It will support a vertical crushing strain of more than a hundred pounds when filled.

The paraffine coating renders the paper impervious to moisture, so that it may stand for weeks or even months without losing any of its liquid contents.

The new bottle has no effect whatever on milk. The milk never comes into contact with the paper (or the printing thereon) for it is perfectly sealed in, and the paraffine has absolutely no effect on milk in any way.

RUNNING MUNICIPAL TROLLEY CARS WITH GARBAGE AND REFUSE

The city of Nottingham owns two destructors, costing, respectively, $39,000 and $102,000. The latter one is equipped with electric machinery costing $12,000, connected with the tramway lines. The cost of wages and other expenses of the destructors averages about 35 cents a ton of refuse burned. The average quantity of electric units produced is 44.23 per ton. The system of converting refuse into electricity works admirably there, and is a saving to the taxpayers. Only forty other towns in the country use anything similar.

Ashes, kitchen scraps, and house refuse receptacles are placed in metal barrels or large iron receptacles at the rear of the premises, in accordance with the practice in this country, and removed weekly by city employees. The total weight of the refuse is about 1,500 tons a week. It is carted away after being collected and burned in the two destructors, which require no other fuel except a trifle for starting the fire on Mondays. Enough steam is produced by the destructors to provide electricity for a third of the needs of the tramway system. Only tin cans and the like are separated from the refuse and sold. All the rest is used as fuel for the production of electricity.

Besides electricity the Nottingham corporation produces from the house refuse more street-paving stones than it can use. A plant connected with the main destructor mixes the clinkers with cement and places the composition under hydraulic pressure. The artificial bricks thus produced are harder than stone and can be used for building purposes as well as street paving. The engineer in charge of the work claims that from tests made the paving stones thus manufactured will wear longer than any similar composition now being produced, while costing but half the price. Another destructor, larger than either of the two now operating, is contemplated by the city authorities of Nottingham.

According to Power, at Columbus, Ohio, where the water is excessively hard, a water-softening plant with a capacity of 30,000,000 gallons per day is being constructed.