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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.

## HIGH EXPLOSIVES ON FREIGHT TRAINS.

In speaking of the recent tragedy on the lines of the company near Harrisburg, the Superintendent of Passenger Transportation of the Pennsylvania Railroad is reported to have said: "It was an accident which could not have been avoided. Every precaution known in train operation was in effect, and so far as I can see, there was not a single violation." It is probable that this official, speaking as an employe responsible for the observance of the rules of this company, was strictly within the facts; but the traveling public is surely justified in asking whether the rules for the acceptance, loading, and carriage of high explosives have been drawn with as strict an eye for the safety of the public as they have for the convenience of the railroads. We understand that dynamite and other high explosives are considered as ordinary freight, and that as far as any special precautions are concerned, it is loaded into cars in common with other boxed freight, the only difference being that the car containing it is usually labeled "High Explosives." Now, that such a condition of things is full of peril is proved by the fact that disastrous explosions resulting from the carriage of high explosives are not by any means infrequent. It is only when such deadly freight, as in the present case, becomes the cause of an explosion that results in a disastrous loss of life, that the attention of the public is forcibly drawn to this very serious peril. It is to be hoped that the legislation which is certain to be introduced with a view to rendering the transportation of high explosives more secure, will with better success than the recent attempt of Senator Elkins, chairman of the Interstate Commerce Commission, to put through a bill placing the regulation of this matter in the hands of the Commission. The mere tacking of an insignificant label upon a freight car that contains high explosive is surely a very inadequate means of warning and safeguard. A more sensible method would be for the railroads to reserve special cars for such freight, and give them a broadly distinctive color or a badge that would at once distinguish them from the cars for ordinary freight. The railroads, of course, would argue that such cars would be running for a large part of the time with but a fraction of a full load. But that could be compensated by charging a rate sufficiently high to meet the extra cost and inconvenience involved.

## AN OFT-REPEATED QUESTION.

One of the questions from correspondents that comes to this office with persistent reiteration, is that of the possibility of one or other of the pair of wheels on a railroad axle, in passing around the curve, slipping on the rail over which it is rolling, while the other wheel does not slip on its rail. Although we have frequently explained how this condition is possible, the question is one that evidently continues to puzzle a great many people—in which respect it is first cousin to that other much-debated fact, that the portion of the periphery of a rolling cartwheel that is near the ground is moving more slowly with relation to the earth than is the rest of the periphery. In the case of the two wheels on any axle of a railroad or trolley car that is passing around a curve, it is evident that in a given length, say 100 feet of the curve, measured on a line lying centrally between the two rails, the inner rail will be shorter than the outer rail, and this for the reason that it is struck to a radius that is about  $4\frac{3}{4}$  feet shorter. Now, when a pair of wheels passes around the curve, it follows that, because of the difference in length of the two rails, either the inner wheel must slip backward on the inner rail, or the outer wheel must slip forward on the outer rail; for the two wheels being fixed on the same axle, move at the same peripheral speed over different lengths of rail in the same time.

It is probable that the excessive wear of rails on curves is due chiefly to this slipping of the wheels. Not long ago some remarkable facts on rail wear on curves were brought out in the course of a paper read

before the New England Street Railway Club by the Roadmaster of the Boston Elevated Road. This road is exceedingly crooked, over 40 per cent of the line consisting of curves, many of which are very sharp. There are eighteen of less than 100-foot radius, and sixteen others with a radius of less than 150 feet. On the sharpest curve, which is of only 82-foot radius, and where it is claimed that the traffic is heavier than that on any other steam or heavy electric railroad, the life of ordinary steel rails averages only forty-four days, the head of the rail wearing down from 0.60 to 0.77 of an inch in that time. The great inconvenience caused by the constantly-recurring repairs led the company to experiment with hardened steel rails, and when some nickel-steel rails were put in on the curve, the wear was reduced to 0.53 of an inch in 204 days. A manganese-steel rail is now being used with good results, and the wear on these is only about 33 per cent as rapid as that of the nickel-steel rail, and about 6 per cent as rapid as that of the carbon-steel rails.

## COAL SUPPLY OF THE FUTURE.

The report of the Royal Commission on the question of the amount of coal still available below the surface of Great Britain, comes as a flat contradiction of those alarmists who take pleasure in telling us that, within such and such a limited time, we shall have dug all the coal out of the earth, and shall have to depend upon some other kind of fuel. The conclusion arrived at by the Commission as to the amount of coal underlying the United Kingdom that is available for working is that over one hundred thousand million tons can be obtained whenever future generations see fit to bring it to the surface. During the last thirty-four years nearly five and three-quarter billion tons of coal have been mined in Great Britain, and the amount still available is, to give the exact figures of the report, 100,914,668,167 tons, so that if coal were to be mined at the average rate per year of the past thirty-four years, there is enough coal available to last for over six hundred years to come. The Commission states, however, that the above figures do not cover the full resources, since they refer merely to the supply available in the coal fields lying at a depth of less than 4,000 feet, and in seams over one foot thick, these being known as the "proved" coal fields. It is estimated that there will be found in the unproved fields at less than 4,000 feet depths about 40,000,000,000 tons, which amount added to that of the proved coal makes a total of over 140,000,000,000 tons that are still available. This is about twenty-five times as much as the total output of the last thirty-four years. Furthermore, it is estimated that there are in the proved coal fields 5,239,000,000 tons at a lower depth than 4,000 feet, while it is estimated that off the coast of Cumberland and South Wales, there is over one billion tons of coal lying below the sea bed. Although the rapid increase in industrial development, and the consequent increase in demand for coal, render it certain that the next thirty-four years will see a vastly greater consumption than that which has taken place since 1870, it must be remembered that new oil fields are certain to be exploited, and the use of oil fuel widely extended, and that the present activity in the development of the world's water-powers will also assist in keeping down the total demand for coal. It must be admitted that, all things considered, if the condition of things in Great Britain may be taken as representative, the exhaustion of the world's coal supply will take place at such a remote date that it need give us no concern.

## BATTLESHIP STRENGTH OF THE NAVIES OF THE WORLD.

The British government has recently published its annual return showing the comparative strength of the seven leading naval powers of the world, from which it appears that of first-class battleships Great Britain possesses 53; France, 20; Russia, 14; Germany, 16; Italy, 14; United States, 12; and Japan, 5; while of armored cruisers, Great Britain has 24; France, 17; Russia, 6; Germany, 4; Italy, 6; the United States, 6; and Japan, 8. Of battleships under construction, Great Britain has 8; France, 6; Russia, 5; Germany, 6; Italy, 4; the United States, 12; and Japan, 2; while of armored cruisers under construction, Great Britain has 4; France, 2; Russia, 4; Germany, 1; Italy, 3; and the United States, 2. In this connection we draw attention to the fact that the argument made in Congress against the construction of the two battleships that were recently authorized, on the ground that we have more battleships building than any other nation, is very misleading. If our battleships were built with the rapidity with which foreign nations do similar work, several of these twelve battleships would now be in commission. It is because we are in arrears, and for that reason only, that our list of battleships under construction is so large. If we do not continue to authorize ships at a certain rate per year, we shall ultimately find that in spite of the large number under construction at any given time, we shall ultimately drop behind such a navy as that of Germany, which is being built on a predetermined plan that calls for

the placing in commission of a certain number of new ships every year.

## SUPERSTITIONS THAT PREVAIL IN RURAL SECTIONS.

That superstition exerts a powerful influence over the affairs of mankind may be ascertained by a residence in almost any rural community in the country. It cannot be said that only the ignorant and uncouth classes give credence to dark sayings. There are thousands of persons who do unacknowledged service to the mysterious and unknown, whose training and education have not succeeded in entirely destroying the effect of potencies and charms learned and believed in youth. Especially is this true if the individual be southern born, for the association and influence of darkies may not be dismissed at a word, and there is no more superstitious class than the southern negro.

It is remarkable how generally sayings of superstition have spread over the country. No section may claim to be above harboring any such beliefs, or rather, practices; for it may not be claimed that all believe in the efficacy who practise and observe certain forms or take cognizance of defined circumstances. Nevertheless, there are, as a matter of fact, few persons who care to pass a pin lying on the ground if the point chance to be toward them. Almost invariably that pin will be picked up. An experiment of this kind was made in Chicago, in an office building, the occupants of which and their visitors should be as free from any touch of superstition as any set of men on earth. But fifteen men out of twenty who passed stooped to pick up a bright pin laid on a dark spot of the velvet carpet in the corridor.

How many persons will confess to a weakness for seeing the new moon over their right shoulder unobserved by any bushy tree top? A greater number will deny the belief in the efficacy who will at the same time confess that they would rather see the moon "right." This remarkable superstition prevails in all parts of the world. Its very universality almost compels belief in its potency.

If one would learn the popular superstitions of any community he must have been reared among the people, for if a stranger were to ask for a list of superstitions prevailing in any one place it is possible no person could recall, or make a list of them. They crop out under suitable circumstances and as occasion calls for their observance.

Below are some of the common sayings in a community made up of descendants of Pennsylvania Dutch, who settled in the Keystone State shortly after the colony was organized:

If in washing the dishes, or in cleaning the table before a meal, the cook drops a dish rag, some one is coming hungry.

If the dish rag is dropped while washing the dishes after a meal, "some slut is coming, if she is not already there."

The crowing of a rooster before the front door early in the morning foretells the visit of a stranger.

If a red bird flits about the yard and chirps merrily, a young girl gayly dressed and light-hearted may be expected soon.

The crowing of a rooster in the night is a sign of hasty news. Thus many a rooster, by a single crow, has cast a gloom over an entire family.

The howling of a dog at night foretells some dire calamity such as a tragic death.

If a dog lies on his back in the front yard with feet extended upward, some member of the family to which he belongs is sure to die soon.

The screaming of a screech owl three nights in succession in or about the front yard, is a sign that some one in the house is in danger of death. To cause the owl to leave, stick the shovel in the fire.

The crowing of a chicken hen portends bad luck. It always results in the death of the hen without delay, for no good woman would allow a crowing hen to live longer than it takes to cut off its head.

In ironing a garment if the smoothing iron is dropped the owner of the garment will never live to wear it out.

Friday is an unlucky day. If a piece of work is begun on that day it will not prosper and possibly the one who begins it will not live to finish it. It probably is true that not ten women out of every hundred can be found who would as willingly start a garment on Friday as on some other day.

If the individuals of a hunting party, in crossing a fence, go over the same section luck will be good, but if several sections be crossed the hunt will be a failure.

If in strolling two persons go on opposite sides of a tree, one or both of them will meet disappointment before the day is over.

Looking at a new moon for the first time through obstructions, as through a tree top, foretells misfortunes during that moon. To see it over the right shoulder and in a clear space brings good luck.

The rabbit always carries omens of ill fortune. If