Safety of Railway Traveling in England, Car Axles, &c.

At a recent meeting of the English Railway Club, which is composed of the representatives of the principal English railways, Mr. Edward G. Watkin, the General Manager of one of the most extensive lines, presided, and made a speech, which was received with great attention. He said those present represented £300,000,000, employed more than 90,000 men, and administered a revenue of £20,000,000 annually. In regard to the safety of railway traveling, Mr. Watkin furnished some novel statistics. He said that he had often thought that if a person wanted to be in the safest place in this world he should get into the first class railway carriage, and never leave it.

In 1854 the English railways carried 111,000,000; the number killed, in consequence of accidents beyond their control was 12. Those 111,000,000 traveled about 15 miles each, so that it was clear a man must make between 10 and 11 journeys, traveling between 150,000,000 and 160,000,000 miles—and that would take, he calculated, between 2,000 and 3,000 years—before a fatal accident might be expected to happen to him. Now, he challenged comparison, in point of safety, between railway traveling and that of any other avocation. Two-thirds of the accidents occur from moral causes, and not from physical ones, as the breaking of an axle, or some defect in the permanent way.

In the *American Railway Times* (Boston,) a correspondent (A. Lindsay) offers a new theory regarding the cause of railway axles breaking. It has hitherto been supposed that the chief cause of railway axles breaking was their losing their fibrous character, and becoming crystalline and brittle by concussions and vibrations. The following are the views of the *Railway Times* correspondent on this subject:—

"At present we are in the dark as to the cause of the axles breaking after having run a long time, although perfect when leaving the mill; that the quality of the iron is changed, having lost its fibrous and flexible character by use, and it breaks, being but little stronger than cast iron, but will sustain considerable pressure. The question is, from whence comes this change? The iron has lost its original fibrous quality and becomes brittle, having as it were a crystalline body, and of course easily broken and always at the wheel where the vibration ceases, subjecting the iron to the continuous jar and granulating it, thus changing its character and destroying its strength. Allow me to say that the whole hypothesis is, as to the cause, erroneous. The true cause is this, that the iron is converted or changed into steel by the friction and the oil. The latter, though designed to remove the friction, contains a portion of carbon, and it is infused slowly, but certainly, into the iron by means of the heat generated while the car is in motion, thus perfecting the destructive process, and rendering the axle certain to break by a sudden stroke or jar, the same as a bar of cast steel. The process of making steel is simply to subject good malleable iron to a moderate heat with charcoal, which carbonizes it, if it is closed up, very much like the axle of the car in the journal, and leaving it in that state for a long time, and it comes out steel, and will break with a slight tap, but will resist a great pressure if steadily applied. My opinion is that no car should be run over one hunded miles before letting the axles cool, for they do generate more or less heat. The more friction the sooner is the axle converted into steel, and the sooner will it break, having become highly carbonized by the oil and heat. Now the great question is, how to restore the axle to its original state of malleability or flexibility and save it from breaking, thus saving thousands of dollars and many valuable lives annually? The true and only way is to detach the axle, when deemed unsafe, and heat it to a cherry red, and immerse it in a pile of unslacked lime, leaving the lime to slack by the action of the atmosphere, and the axle remaining in it for about thirty days, and the axle is again fit for use. The lime having lost its carbon by the process of burning, and the axle or iron being highly carbonized, the lime has a direct affinity for the carbon in the iron, and thus abstracting it, restoring or changing the iron to its original state or softness. I believe I have solved the mystery, and if any man can disprove it I would be pleased to hear from him."

Fish Breeding not a New Art.

The *Southern Cultivator* published at Augusta, Georgia, commences its fourteenth volume this month, continuing an able article on artificial fish breeding, by Prof. J. Bachman, D.D., of Charleston, S. C., one of the ablest living naturalists. It is generally supposed that artificial fish breeding is quite a recent art, first practiced in France a few years ago, but here we are informed that Dr. Bachman raised fish successfully from the ova, twenty years since. The plan which he practiced was the very same as that now used in Europe, and recently introduced, for raising salmon. Every planter and farmer in our country should read the article of the Reverend Naturalist on breeding fish artificially in ponds.

Recent Foreign Inventions.

Glass Tiles for Roofing—James Bowron, of the Tees Glass Works, Stockton, Eng., has taken out a patent for the manufacture of glass tiles, by pouring the glass when in a fluid state into molds, and then pressing them like clay tiles. After partially cooling they are removed to the annealing ovens, and when cold the tile is complete.

Some of the old houses in the cities founded by the Dutch in New York are covered with tiles, but we suppose that no house built in our country during the past forty years has been so roofed. The common clay tiles do not stand our severe winter weather; they are liable to crack and disintegrate by moisture and frost, otherwise tiles make a very durable fire-proof roof. Slate and tin plate are the materials now most commonly used for roofing in our cities, especially the latter; and we have seen one machine shop in Troy, N. Y., (Starbuck's) covered with cast-iron shingles. Glass tiles would be far more expensive than tin plate for roofing, but for many buildings devoted to particular purposes, such as for daguerreotyping, conservatories, and observatories, a roofing of glass tiles seems to be the very kind required. Glass tiles are not new, but those heretofore manufactured have been made by cutting a piece of crown, sheet, or plate glass to the required shape, then heating and bending it. The claim of Mr. Bowron is for making the glass tiles by molding and pressure, which is a great improvement on the old method.

Coloring Goods—Pierre Depierre, of Paris, has obtained a patent for the employment of alder flowers, to form a substitute for cream of tartar in dyeing, and also for their use in dyeing black on cotton, silk, and wool, also goods composed of wool and cotton, mixed.

The foregoing is taken substantially from the London *Mechanic's Magazine*, which says, "the alder flowers are also applicable to the manufacture of ink." Alder bark was used for dyeing black in Germany and England on wool and linen before logwood was known as a dyewood, and in all likelihood so were alder flowers. We do not see how they can be used as a substitute for cream of tartar; but some of our dyers will soon test their quality for this purpose. Alder bushes are found everywhere, and if their flowers possess the qualities for which P. Depierre has taken out his patent, the foregoing information will be of no small value to our manufacturers of woolen and cotton fabrics.

Iron Lasts for Boots and Shoes—E. Francis, of London, has taken out a patent for metal lasts made with holes to receive the pegs and pins, to keep the sole in its place when making a boot or shoe.

Water-Proof Varnish—R. Paul Coignet, of Paris, has obtained a patent for making a varnish, which, when applied to cotton, cloth, or any other textile fabric, will make it waterproof. It is composed of 100 parts linseed oil, 35 of coal oil, 2 of mineral pitch, 5 of resin, 5 of wood tar, 10 of mutton suet, 1 of lampblack, to color it, 2 of alum, and 2 of litharge. These are all boiled together for two hours, and applied while warm with a brush. This ought to make a first rate varnish for the strong leather boots of fishermen and farmers.

Bleaching Paper Pulp.—Paul F. Didot, chemist, of Paris, has discovered a new method of bleaching paper pulp, for which he has secured a patent. He immerses the pulp in a solution of bleaching liquor,—which is made by saturating chloride of lime in water, and using the clear liquor—and then passes carbonic acid gas through it. It is stated to be an improved process for bleaching both pulp and textile fabrics.

Our paper manufacturers and bleachers of cotton goods should try the experiment. Sulphuric acid is now used in discharging the color from rags and paper pulp to bleach them, and it appears to us that it must be cheaper than carbonic acid gas; the proof of the value of any process, however, is the testing of it.

In the *London Artizan* we find descriptions of some interesting improvements, notices of which we herewith transfer, with engravings.

Improved Tug Hook—By C. J. Hunt, of Surrey Co.—The inventor's object was to make a tug hook that would open out more fully than those in common use, and more easily release itself from the staple, or to whatever it was applied.

Some inventors, instead of improving and simplifying a subject, render it more complicated and less useful than the original. The annexed engravings show the variety of parts that it is possible to introduce into so small an affair as a tug hook, when an inventor puts his wits to work.

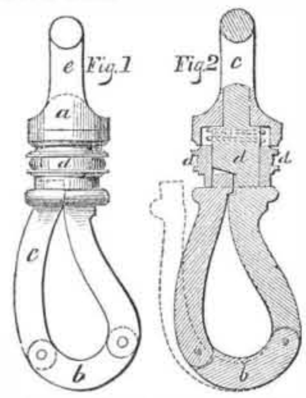
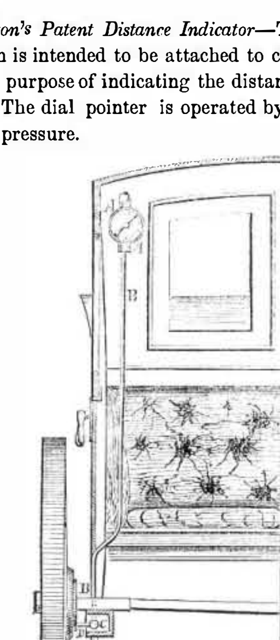


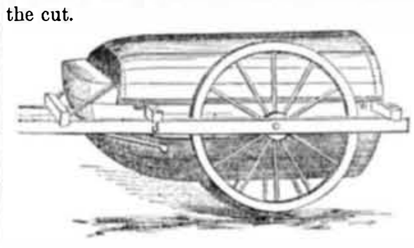
Fig. 1 is a side view, and fig. 2 a section. *a* is the stem to which a swivel eye, *e*, is attached, for receiving the end of the tug. The loop portion of the hook is divided into three parts, two or which, *b* and *c*, are pivot jointed, as shown, so that the hook may be opened out straight. The upper end of *c* is confined by the band, *d*; the part *c* will therefore be released or confined, according to the direction in which *d* is turned. There is a spring placed above *d*, which prevents a self-acting or too easy movement of the parts, and obviates the liability to uncouple when the contrivance is in use.

Norton's Patent Distance Indicator—This invention is intended to be attached to carriages for the purpose of indicating the distance traveled. The dial pointer is operated by atmospheric pressure.



Referring to the cut, A is the indicator, which may be suspended in any convenient part of the carriage; the dial is divided into miles and furlongs. B is a flexible tube, to connect the air-box, C, with the instrument. C is a small iron air-box attached to the axle. D, a pin, stud, or cam, attached to the nave of the wheel, which acts upon the air-box each time the wheel makes a revolution, forcing the air through the flexible tube, and so acting upon the instrument, A. The box, C, being attached to the axle, and it being connected to the instrument by a flexible pipe, is not affected by the oscillation of the body of the vehicle. Mr. Norton also applies his instrument to various other purposes, viz.: as indicators for registering the speed of machinery, steam engines, &c.; as a distance indicator for land surveying; also as a pedometer, for measuring the distance walked or run, and registering from 1 furlong to 20 miles and upwards. The editor of the *Artizan* says he has tested the correctness of one of these contrivances for nine months, and found it to work satisfactorily.

Amphibious Baggage Wagons.—This improvement is designed for army services, and consists of a boat-shaped cart body, madewater proof, and placed upon wheels as shown in the cut.



For military transportation in countries that are much intersected with rivers, as in the South of Russia, it appears to be admirable. Experiments with vehicles of this description have been made, during which the horses were made to swim the streams, and drag the cart and contents behind, the latter floating on the surface of the water. Transportation across rivers was thus successfully accomplished without unharnessing the animals. It is proposed to supply the British army with baggage wagons of this kind.

Spiking Logs—Floating some and Sinking others.

A correspondent (M. Capella, of New Orleans,) informs us it is a fact that some unseasoned mahogany logs, which will not float in water, can be made to do so by simply driving spikes into them. This cannot be done with the very heavy logs, but he states, "it is an every day occurrence at Havana with certain logs," and he has witnessed it both at that place and at various other places in South America and the West India Islands. His theory of the cause is given as follows:—

"The specific gravity of unseasoned mahogany is a little greater than that of water, consequently it will sink in it; but by driving a spike into the end of such a log, a partial separation of the fibers take place in the whole log, thus increasing its volume in a greater ratio than the size of the spike, although not noticeable by the eye; and this increase of the volume of the log makes it equal, or a little less in weight than the same bulk of water, consequently it will float in it."

He states that he committed a great mistake upon one occasion, about 20 years ago, in applying the same method to float Mangrove logs. He had some of these logs cut at the mouth of the Orinoco river, and although they are heavier than water, he thought he could easily make them float by driving spikes into their ends, as he has seen done with mahogany. His timber cutters expostulated with him not to try the plan, remarking that "he would never get them out of the water again, and that they would sink like iron;" but he was determined to make them float by spiking them, so spiked some of them were, and then launched into the water, when lo, instead of floating, as he supposed they would, down they went to the bottom like stones, and that was the last he saw of them.

Another correspondent, from Louisiana, informs us that he endeavored to make cypress logs float by plugging them, but when launched, down they went to the bottom of the river, and that was the last he ever saw of them. We have now learned something positive about floating mahogany logs from M. Capella.

Thanks to Dr. Kane.

The Legislature of Pennsylvania has passed resolutions of thanks to Dr. Kane and the officers under his command, in the late Arctic Expedition, for their intrepidity, skill, and daring, and the discoveries made by them in the Northern Polar Seas.