

tween which the divided wave finds its way, and the same with the framing in the rear. The braces are of iron, with a casing of timber, and weighted with heavy iron weights; the ground mooring is lewised into the bed of the sea. The weights are sufficient to keep the sections motionless, except in a storm, when rigidity would endanger their safety; the wave then gradually gives impulse to the section, which drifts as the weights are lifted to the extent of a few feet, as even a solid body, like a ship or a cask, would only be driven about 10 feet to leeward by one wave. The moorings, now released, have absorbed and measured the total pressure of the wave, and spring back with their full reactive force to their original vertical position: the back framing of the section, as it recoils, completely disseminates any remaining wave. Each section being separate from the adjoining one, has an entirely independent play before the vermicular section of the sea.

Mr. Smith concluded by pointing out the economy of his invention, the freedom from silting, the facility of removal, and other advantages which it possessed. The plan has already been laid before the Liverpool Dock Trust, the Chamber of Commerce, and many of the principal literary and scientific societies and associate bodies in different parts of the kingdom.

On Color Blindness in Connexion with the Employment of Colored Signals on Railways. By GEORGE WILSON.*

In the number of your Journal for the 29th of January, 1853, Mr. W. H. Tyndall has drawn attention to the important fact, that the *red* and *green* danger signals employed on our railways, when *seen together* in certain circumstances, may be, and on actual trial were, mistaken for *white*—the safety signal.

He also observes, that “it is not improbable that some of the accidents which have occurred in railway traveling have arisen from the colors of the lights shown being indistinctly seen; perhaps from a confusion of rays from two or more lamps. In some cases most contradictory evidence has been given as to the color of the signal shown.” Few, probably, will dispute the justice of Mr. Tyndall’s conclusion; but there is a source of danger connected with the use of colored signals, by day as well as by night, not referred to by him,—probably of more importance than that which he has indicated, and, at all events, of sufficient importance to demand notice at a period when railway accidents have been unusually frequent.

It has long been known that certain persons cannot distinguish colors from each other; and considerable interest has been felt in this form of depraved vision since Dalton, in whom it occurred, published the particulars of his case. Under the title of Daltonism, *Chromatopsudopsis*, or color blindness, the peculiarity of sight in question has been referred to by different writers. Those who are curious in the matter will find the subject fully discussed in a ‘Memoir on Daltonism, or Color Blindness,’

* From the London Athenæum for April, 1853.

by Prof. Wartmann, in Taylor's 'Scientific Memoirs,' Vol. iv. 1846,—to which the English editor has added some valuable notes.

My present object is, to draw attention to three practical relations of color blindness, namely,—

1. That the affection is much more prevalent than is generally imagined.

2. That red and green, the colors used for danger-signals on our railways, are exactly those which are most frequently confounded with each other by the subject of color blindness.

3. That color blindness implies not merely a confusion in distinguishing between two or more colors, but, at least in many cases, an imperfect appreciation or feeble hold of color altogether as a quality of bodies.

24, *Brown Square, Edinburgh, March 28.*

On Railway Accidents from 1840 to 1852 inclusive. By F. G. P. NEISON, Esquire.*

The author adopted a classification of twelve principal causes of accident, six of which were assigned to circumstances over which the respective companies had no direct or certain control, and the other six to causes which fell directly under their control. The deaths from collisions and from trains running off the line, which constituted a large portion of the whole, had diminished 35 per cent. since 1840; while the deaths occasioned by passengers jumping from the trains in motion, as well as from mounting trains in motion, had increased 123 per cent. in the same period. The subjoined table shows the per centage of deaths from causes *under* the control of companies and *beyond* their control respectively.—

Causes.	1840-43.	1844-47.	1848-51.
	Pr ct. of total.	Pr ct. of total.	Pr ct. of total.
Beyond control of Companies . . .	37.50	48.44	56.84
Under " " " " " " " "	62.50	51.56	43.16

Thus it appeared that among passengers the deaths from accidents due to causes "beyond" the control of companies had *increased* no less than 50 per cent. during the last twelve years,—while, on the contrary, deaths from causes "under" the control of companies had *decreased* 30 per cent.; these results, taken with the fact that the number killed from all causes had decreased from 1 in a million in 1840 to 1 in $2\frac{1}{2}$ millions in 1851, proved that means and influences were actively at work which were increasing the safety of life, and that accidents would become yearly less and less in ratio to the traffic, in spite of the increasing carelessness of passengers, as shown by the large increase of deaths from causes under their control. In respect to injuries, the number had declined from 1 in 220,000 passengers in 1840, to 1 in 336,000 in 1851; and they differed from the deaths inasmuch as that $13\frac{1}{4}$ per cent. only of the accidents which occasioned them were attributed to causes within the control of the passenger. Hence it was argued that the tendency of accidents arising from details of management was to inflict bodily injury rather than occasion

* From the London Athenæum, April, 1853.