rience of wire ropes on inclined planes, as an extreme, and by way of contrast. Suspension bridges should be built so as to be entirely, or very nearly exempt from vibrations. The cables and suspenders of the Niagara bridge, are sustaining but a moderate tension, far within their elastic limits, and may be considered as at rest.—They are also well protected against oxidation, and will consequently last an indefinite length of time.

In connection with this subject, I will cite another interesting fact. The small cables which supported the temporary bridge, put up under the superintendence of Mr. Ellet, and afterwards strengthened by Mr. Buchanan, had been exposed occasionally, to heavy strains, and to great vibrations. The wire originally, was very good; about the same quality as that in the new cables, and made by the same manufacturer. On removal of the old work, I tested it, and found its strength and toughness scarcely impaired; so little indeed, that I did not hesitate to work it into the new cables. Another fact is worthy of notice. The old cable measured from one and a quarter to two inches in diameter, and had been wrapped at intervals of about nine inches. The wire had been originally, well coated with linseed oil, and the cables afterwards, repeatedly painted with Spanish-brown or linseed oil, on the outside, which made them impervious to water. On taking them apart, I found the oil inside, still in a soft condition, forming a tenacious varnish, and no trace of oxidation. These cables were put up in 1848, and removed in 1854; consequently had served six years. It is difficult to state how long this wire would have proved safe, if it had remained in the same situation, exposed to the same