usage. The Wire Suspension Bridge at Friburgh, in Switzerland, the largest span in Europe, is still considered a safe work. It was completed about 1830. The roadway of the bridge is 808 feet long; weighs about 300 tons, and is supported by eight cables of five and a half inches in diameter, containing in all, about 4700 wires, No. 10. Its comparative strength is, therefore, much less than that of the Niagara Bridge, while it is frequently exposed to severe gales, and not secured against oscillations.

Wire cables, if guarded against oscillations, and not exposed to an undue tension, may be looked upon, as of indefinite durability. I have cited wire rope on inclined planes, as an extreme fact, regarding durability. Severe friction, short bending, constant vibration, high tension and frequent severe shocks, will soon wear out the best material. The more we can reduce these exposures, the greater will be its durability. The conditions of durability, are certainly most favorable to the cables of the Niagara Bridge. An instance of comparative great durability, is furnished by wire sofa springs, which, when made of good material, will not lose their elasticity, under fair usage, in a life-time. As another very remarkable case of great durability, under the most severe exposure, we may refer to the wire strings of a piano, which are kept at a high tension, and in that state exposed to an almost incalculable amount of vibration. Common wire would not resist this action twenty-four hours. Piano wire is therefore made, either of the best steel, or of bars which form a good steel outside, and a fibrous iron inside, purposely manufactured. Good piano wire furnishes a very re-