received, and to whom they must be addressed.

PAINTING STEEL BRIDGES.

The life of a steel bridge is largely dependent upon the manner in which it is first painted—and afterwards kept painted. Unless kept properly painted, they deteriorate very rapidly. Railway bridges are greatly injured by the vibration caused by heavy moving loads. But in the case of highway bridges, rust is the chief destructive agency. If they could be fully protected from rust, steel highway bridges would practically last forever. It is found that painting is required about once in five years; oftener if the bridge is in a much exposed situation by a lake shore.

Before painting steel, the surface should be absolutely free from rust, scale, moisture and grease. Rust is removed by scraping with steel scrapers, and scale by the use of stiff wire brushes. Rust left beneath the paint will spread, in time the paint will flake off, and the metal is then wholly exposed to the destroying action of air and moisture. As portions of the metal in a bridge are only 1-4 and 1-6 of an inch thick, it is evident that rust, acting on both sides, can greatly weaken the structure. Connections, too, require special care, to see that they are fully protected. Bridge companies rarely exercise sufficient care, when erecting a bridge, to see that the scale is fully removed and the bridge properly painted.

The materials commonly used in painting bridges are red lead mixed with linseed oil; and oxide of iron, with linseed oil. The former is much the more desirable paint. These are subject to much adulteration and care has to be exercised to procure reliable materials. Lamp-black added to red lead will change the color to a rich chocolate, and will not injure the paint.

A useful paint consists of red lead, lamp-black and pure raw linseed oil, mixed in the proportions of one pound of lamp-black, eight pounds of red lead and one gallon of linseed oil. The red lead and lamp-black should first be mixed dry, the linseed oil added, and the mixture stirred to a uniform consistency.