is constantly taking place,—whilst not rendering from this cause the friction any less,—necessarily have the tendency to abrasion of the surface, and the retention and concentration of the heat, developed upon a small surface, materially, aid in the destruction of both journal and bearing.

DISCOVERY OF STAR METAL.

In the course of a series of experiments with zinc or spelter, made some years ago, it was discovered that the use of certain chemicals had a peculiar effect in changing the nature of the metal, and from this *fortunate* circumstance the celebrated Star metal bearing was constructed and given to the world. The new project, however, like all new undertakings, met with many discouraging obstacles, and the attempts, by analysis, to discover the new alloys, have retarded its universal adoption. On a prominent road in the Dominion, after repeated failures to arrive at the ingredients, another article was substituted and used for some time, till at length, owing to constant delays to trains, it was abandoned.

BRASS BEARINGS.

Prior to the invention of Star metal, the bearing most commonly in use was made of solid brass. The friction of an iron axle in a box of brass, well lubricated, was estimated at 1.40 of the total pressure with which the surfaces were brought together. With moderate pressure, low velocities and perfect lubrication, this alloy did very well for a bearing. The composition of brass, as, commonly, used for this purpose, is nine parts of copper and one of tin. Now, although copper has no marked chemical affinity for iron, combining with it, chemically, only in small quantities, it is, however, well known that there is a strong attraction between the two when brought together under certain conditions—an attraction which does not exist between many metals under similar circumstances. If a clean wrought iron nail be dipped into, and then withdrawn from, a dish of melted spelter or zinc, it will come out clean and without any par-