APPENDIX No. 1.

PHŒNIXVILLE BRIDGE-WORKS.

REPRINTED FROM LIPPINCOTT'S MAGAZINE FOR JANUARY, 1873.

In a graveyard in Watertown, a village near Boston, Massachusetts, there is a tombstone commemorating the claims of the departed worthy who lies below to the eternal gratitude of posterity. The inscription is dated in the early part of this century (about 1810), but the name of him who was thus immortalized has faded like the date of his death from my memory, while the deed for which he was distinguished, and which was recorded upon his tombstone, remains clear. "He built the famous bridge over the Charles River in this town," says the record. The Charles River is here a small stream, about twenty to thirty feet wide, and the bridge was a simple wooden structure.

Doubtless in its day this structure was considered an engineering feat worthy of such posthumous immortality as is gained by an epitaph, and afforded such convenience for transportation as was needed by the commercial activity of that era. From that time, however, to this, the changes which have occurred in our commercial and industrial methods are so fully indicated by the changes of our manner and method of bridge-building that it will not be a loss of time to investigate the present condition of our abilities in this most useful branch of engineering skill.

In the usual archeological classification of eras the Stone Age precedes that of Iron, and in the history of bridge-building the same sequence has been preserved. Though the knowledge of working iron was acquired by many nations at a pre-historic period, yet in quite modern times—within this century, even—the invention of new processes and the experience gained of new methods have so completely revolutionized this branch of industry, and given us such a mastery over this material, enabling us to apply it to such new uses, that for the future the real Age of Iron will date from the present century.

The knowledge of the arch as a method of construction with stone or brick—both of them materials aptly fitted for resistance under pressure, but of comparatively no tensile strength—enabled the Romans to surpass all