



CLEFTRIDGE SPAN, ERECTED OF BETON COIGNET, IN PROSPECT PARK, BROOKLYN, N. Y.

The Cleftridge Bridge.

The city of Brooklyn, N. Y., can boast of possessing, in her beautiful Prospect Park, one of the most elegant and elaborate structures of the viaduct class in the world, namely, a single-span serving to pass the foot-path under the carriage-road. It is represented in the engraving to the width of the Breeze Hill drive over it, namely, 88 feet. This archway enables visitors, turning from the main entrance, to reach the concert ground and lake shore on foot at an easy grade and by a protected line of approach.

We ought to state that the beautiful design is due to Mr. Calvert Vaux, and that it gave the manufacturers of the stone a splendid opportunity to prove how well their material is adapted for decorative purposes, by the facility it offers for the introduction of ornamental details, because after a design for recurring ornaments is once well modelled and prepared for carving, it can be repeated by casting over and over again, with ease.

STEAM-POWER is to be tried upon the Penn avenue line of street cars, in Pittsburgh, Pa. Mr. H. E. Marchard, of that city, recently received a contract for the building of a double engine of compact form, 18 horse-power and double cylinder. This engine is geared directly to the forward shaft of the car, while power is communicated to the rear shaft by endless chains and toothed gearing. The cylinders are 7 x 8 inches, and adorned engraving, and was estimated to cost, in stone, \$250,000—almost a quarter of a million; while a plain brick arch of the same size would have cost about \$40,000. It was then suggested to have it made of

Beton Coignet by the N. Y. Stone Contracting Co., of Brooklyn, N. Y., who, in the winter of 1871-72, erected the whole structure for \$20,000, and this under the most trying circumstances. These simple facts are one of the best arguments in favor of this kind of material, the other arguments being its elegant appearance (evident from the engraving) and its durability.

This bridge has for seven years been subjected to severe winter frost, moisture, dryness, etc., without the least impairing results. The carriage-road goes over the same, while under the arch the foot-path is laid with an ornamental pavement, also of Coignet stone. The arch is 90 feet span, and in length equal precision, and little cost.

It should be remembered that in the architectural treatment of archways for park purposes, the most serious difficulty lies in the arrangement of the soffit or ceiling, the surface of which is always so large that its elaboration in brick, stone, or wood, if made ornamental, is so expensive from the labor required that it is only admissible in exceptional cases. It is therefore important to be able to make, at a moderate expense, an elegant and ornamental soffit, as in fact it is as it were the key-note of the whole design. This has been very successfully accomplished in the Cleftridge span, which is a model worthy of imitation, and we have no doubt that our readers will appreciate the beauty of the design, our engraving being a correct representation of its appearance after completion, being copied from a photograph taken on the spot.

DRAINING THE GERMAN SPRINGS.—Much excitement has been created at Ems, in Germany, the most famous of Continental watering places, by the threatened destruction of the baths

which are its main dependence. The mining companies working in that neighborhood are undermining the springs. The mines formerly supplied lead and silver only, but since the extension of the manufacture of steel, the gangue rock—which is a carbonate of iron—has become more important than the other parts of the ore. The fact seems to be that the increased activity given to the operations by this new source of profit has led to excavations to a depth which may really interfere with the natural water courses of the region. Such a result is by no means new in mining, for, frequently, wells and springs dry up when the shafts near them are sunk to a great depth. Sometimes the mine is the sufferer from the mishap, as was the case with the famous Rammeisberg copper mine. The discovery of a very rich vein in one portion of the workings was followed by the drying up of the wells in Goslar, a town of 10,000 inhabitants, situated two or three miles from the Rammeisberg shafts. The managers were obliged to wall up their rich stores and forego the benefit of working them. At Ems an investigation has been ordered, but as yet the result has not been reported, so that, for the present, it cannot be determined whether the baths or the mines are to be the sufferers.

CASE-HARDENING.—*Polytechnic Review*: In case-hardening iron to a considerable depth, the unhardened portion is weakened by crystallization. This difficulty may be completely remedied by first hardening as usual, then annealing the articles the same as if of steel, in which operation the iron will assume its original fibrous structure; then harden, and, if required, temper the same as steel.