A Big Blast.

By Val Norton.

BEFORE THE EXPLOSION, SHOWING THE MOUTH OF THE TUNNEL.
From a Photograph.

THE English tourist in passing through Cherbourg would find it a comparatively uninteresting place. The town is modern and well built, but there is no inducement to make it a stopping-place. Cherbourg owes its importance to the fact that it is a fortress of the first class, and the third naval harbour of France.

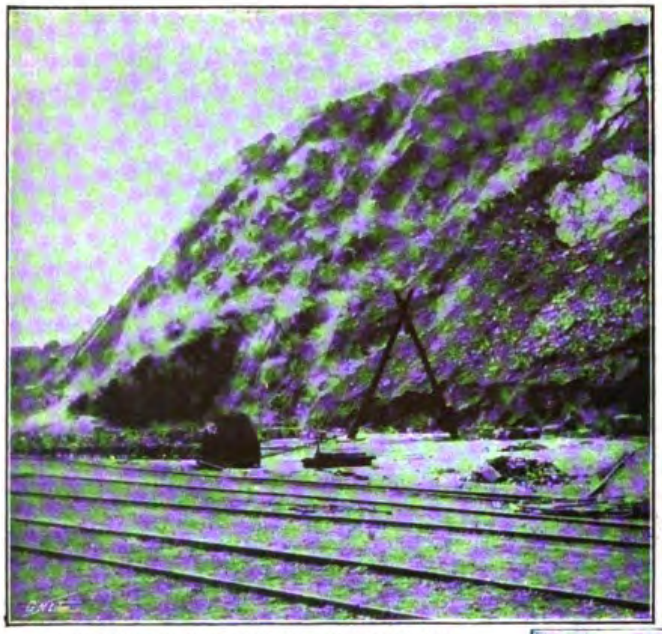
It is said that Vauban, the great French military engineer, conceived the idea of making a naval harbour at Cherbourg, in opposition to Portsmouth. The works were abandoned two or three times, but completed at length in the reign of Napoleon III., when Queen Victoria was present at the opening ceremony. The harbour and its buildings cover an area of fifty-four acres, and were hewn from the solid rock—a marvellous feat of engineering.

The presence of quartzite rock in the neighbourhood enabled the famous Vauban to carry out his design of the huge "digue" or breakwater, which protects the Roadstead of Cherbourg; a work which was also twice abandoned.

In July, 1899, one of the quarries near Cherbourg was the scene of a big blasting operation, when thousands of tons of stone were rent from the bosom of Mother Earth. The planning of one of these big blasts requires a considerable amount of experience and skill, as the stone is wanted in as large blocks as possible, the blocks being required for the protection of the sea-walls, and they are submerged in front of the breakwater to protect the apron of the wall.

A position must be chosen for the chambers to hold the blasting charge in such part of the rock as offers the most resistance; that is, where the seams of stone are the thickest and

SIDE VIEW OF THE SCENE, FROM THE POSITION TAKEN TO SNAP-SHOT THE EXPLOSION.
From a] *[Photograph.*



THE FIRST INDICATION OF THE EXPLOSION.
From a Photograph.

most free from fissures, which would allow the gases to escape, and so considerably reduce the force of the explosion. A place having been chosen, men were set to work to make a tunnel, 65ft. long, straight into the rock, terminating in another tunnel running at right angles both ways, thus forming a T. The two arms to right and left were each 26ft. long, and terminated in chambers to hold the charge.

It was very slow work cutting into the hard rock, and calculated only to proceed at the rate of about 15in. per diem, and at a cost of 30s. per foot; the average dimensions of the tunnels being 5ft. high by 3ft. 6in. wide. The work was done in the usual way, by drilling small holes and inserting a dynamite cartridge, which, when exploded, disintegrates the rock. When the laborious task of cutting the tunnels was finished the very delicate operation of charging the chambers was begun.

The explosives employed were Favier powder and ordinary mining powder—1,250 kilos of the former and 3,000 kilos of the latter. Favier powder is an explosive having all the properties of gunpowder,

From a] THE FINAL RUSH. *[Photograph.*

From a] THE NEXT DEVELOPMENT. *[Photograph.*

but with three times its strength. Dynamite was not used, as the blocks were wanted from one to five tons in weight, and it tends to shatter the stone too much.

The powder charges having been placed in the chambers with the greatest care, and a fulminate of mercury detonator inserted to explode them, instantaneous fuses—in duplicate—inclosed in lead-pipe are led to the mouth of the tunnel, being kept about half-way between its floor and roof. This is a very difficult operation, and the greatest care must be exercised so as not to injure the fuses incased in the lead-

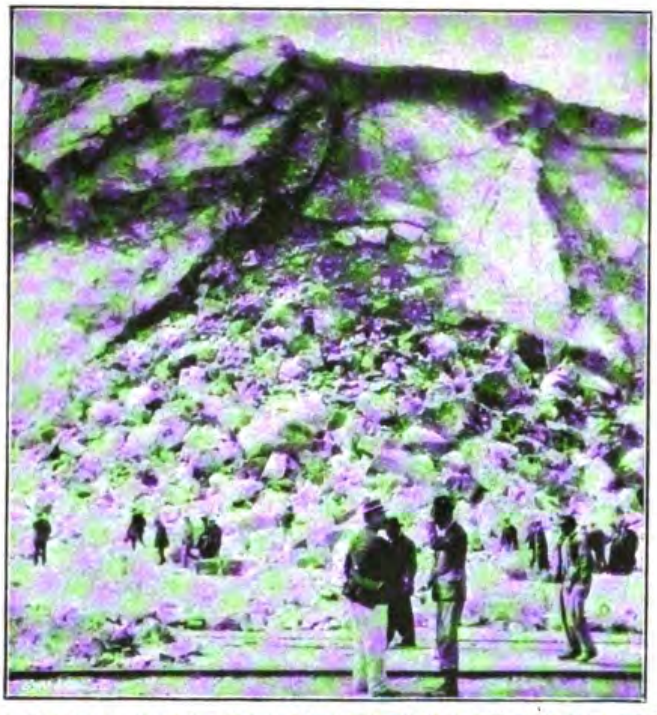
piping in any way, and thus render the charge useless.

The whole of the tunnels being filled up with cement masonry, which is allowed a day or two to harden, the mine is ready to be exploded. The finishing touch is to connect the fuses to the firing charge, which is done in the following manner. All the fuses are led into a pocket at the opening of the tunnel, and enveloped in gun-cotton, with a time-fuse inserted.

The thickness of the stone, charge, and resistance being calculated, all quarry plant is removed from the immediate vicinity, and although the zone of danger is extremely small, spectators are kept at a distance of about one hundred and fifty yards. The sound of a horn is heard, and everyone knows that the fatal moment is at hand. The time-fuse is lighted! The important officials join the group of spectators with steps that are calculated to show dignity, but are obviously a little too hurried. Anxious moments follow, when every ear is strained to catch the slightest sound, and every eye is fixed on the mass of rock soon to be rent in pieces. Soon a short sharp explosion relieves the tension on the ear, followed closely by a muffled bellow as the chambers explode; and the face of the rock becomes covered with little jets of light vapour escaping from every fissure; the actual rending of the rock is veiled from sight, as the muffled bellow develops into a mighty roar and the blocks of stone tumble one over the other in a huge cataract.

Nobody is allowed to approach the fall for some time after the explosion, as the gases generated are extremely dangerous to life. At a similar explosion which took place at the quarries in 1887 some workmen approached too soon to the scene, and seventeen fell down insensible, overcome by the gases: three of the number died some time after from the effects of their foolhardiness. The fall of stone estimated at this blast was 40,000 tons, and gave work for three months at this particular quarry.

The accompanying snap-shots were taken by a member of a party of Englishmen who were invited to witness the blast.



AFTER THE EXPLOSION—TAKEN FROM ALMOST THE SAME POSITION AS THE FIRST PHOTO.