

spread out laterally in many different directions, covering a much larger area than was anticipated, the remotest points being some fifty feet apart. The fact of the air rushing out through every bore hole seemed to show that we had to depend upon the immediate roof for retaining the compressed air. Hence the first conclusion arrived at in regard to making the repairs was to wait until the air-chamber had been partly filled in around the edges, then let off the air pressure entirely, trusting to the pillars and concrete to support the weight, and whatever spring water came in was to be pumped out. Large holes could then be cut in the roof and the repairs made, provided that the waters did not come in too fast through the timbers. It was very desirable, however, to gain time and do as much as possible at once, while the air-pressure was yet on. This made it necessary to check in some way the loss of air attending the cutting away of the timber.

With this object in view it appeared advisable to inject cement into the burnt cavities through the bore holes until the leakage was stopped. Accordingly a cylinder was prepared with a piston and a one and a quarter inch injecting pipe, and when freshly filled was placed under a hole, and the cement forced up by a screw jack. This worked well. Experiments showed that a mixture of one part of cement and one of sand could be forced a distance of ten feet through a small pipe and then would spread out laterally to some distance. As soon, however, as a certain moderate amount of resistance was experienced, all the water would be squeezed out, and it became impossible to force the charge another inch. We soon found that the mere suction of air through the blow holes was sufficient to draw up the cement loosely through a pipe. When a hole was clogged the stuffer was applied to compact it. By these means six hundred cubic feet of cement were injected, and all escape of air ceased. A number of trial bore holes failed to disclose any space not filled with hard cement. We already flattered ourselves that this filling might answer every purpose, but in order to make sure, one large hole, six feet