ing fires, but before it was discovered the fire had got too great a headway to be successfully fought. How it originated cannot be determined, as there was no fire or open lights allowed in or about the breaker. This company has been very unfortunate, as this is the second time for this colliery breaker to be burned inside of a few years.

The first breaker was built in 1891, and was started up to prepare coal in August of the above year. In about four years and a half later, or on January 8, 1896, it was destroyed by fire, which originated from a hot journal. The breaker, which was recently burned was what is called a wet and dry breaker, and had a large capacity for cleaning and preparing coal for market. It was started up on August 24, 1896.

A new breaker is in the course of erection on the site of the burned one, which will be of the same capacity and is expected to be in operation by March or April of 1900.

Fire in No. 6 Shaft, Pennsylvania Coal Company.

On Tuesday morning, December 13, 1898, Thomas McDonald, the fire boss, on entering the mine at an early hour to make his examination, as required by law, discovered that the timber of an inside slope in the Fourteen Foot, or Pittston, vein was on fire and that the fire had attained considerable headway. He immediately returned to the surface and sent word to the mine foreman, John F. Reynolds, who, upon seeing the serious condition of affairs, sent word to James Young, assistant superintendent of mining, and James Y. Bryden, district superintendent. A hasty conference was held and immediate action taken to get water into the mine. The water line outside was connected with the 2½-inch speaking tube in the shaft and connected by hose from bottom of shaft to the fire. For a time the water appeared to be getting the better of the fire, but as the men advanced down the slope the heat and fire became greater, and the heavy draft on the water line which feeds the colliery boilers, interfered with a steady supply to the hose of sufficient pressure to do much good, therefore, more water was necessary. The steam pipe from the No. 6 washery to the No. 6 boiler plant was disconnected and used as a water line down the shaft. The washery pumps were then started, and a good supply of water obtained and for a time hopes were entertained that the fire would be extinguished by this means. However, on Friday forenoon, December 16, the Mine Inspector for the district went in with Assistant Superintendent James Young and the foreman, who made a thorough examination and came to the conclusion that the fire had eaten its way down into the old and fallen workings of the abandoned No. 2 slope, and it was their opinion that it could not be extinguished except by flooding the workings. On reach-

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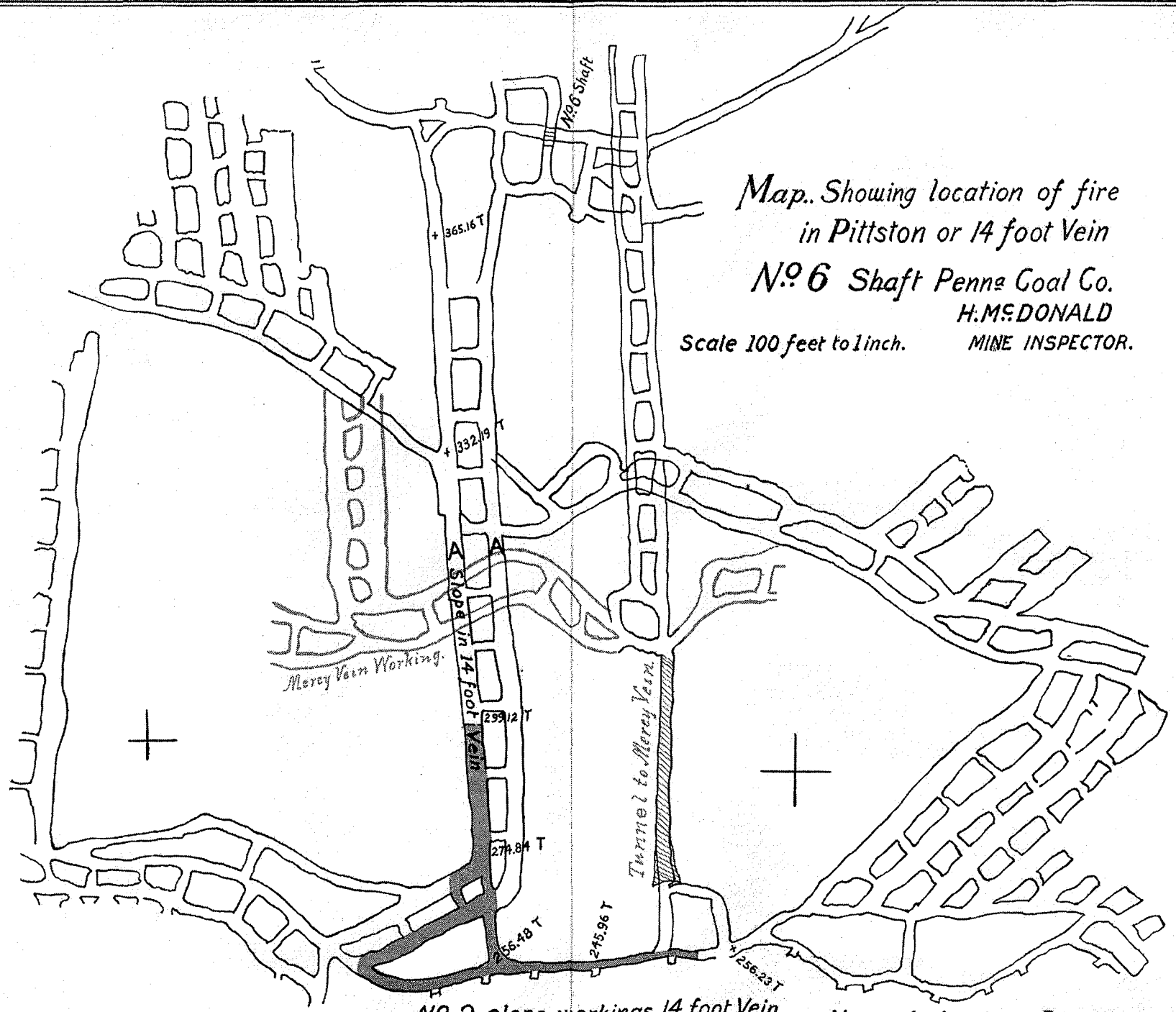

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ing the surface, they reported the situation to George B. Smith, general superintendent, who was on the ground. From there they repaired to the residence of Andrew Bryden, consulting superintendent of mining, and held a further consultation with him and Alex. Bryden, superintendent of mining, who was staying there on account of an injury.

After a full explanation of the situation, it was concluded to flood the mine and preparations were at once begun. Two streams of water were started running on the upper edge of the fire in the slope and the slope and the airway or manway to the slope bratticed across below the second lift, allowing only sufficient air to pass down the slope to keep the smoke and products of combustion from rising upward too freely. A wall was built across the Rock tunnel, from bottom of slope to Marcy vein to prevent, if possible, the fire extending into that vein.

The extinguishing of the fire by flooding, involved the filling of the workings of No. 14 colliery to or above the level of the fire and the lower lift workings of No. 6 shaft, an area of over 200 acres. Work on preparation for the flooding of this large territory was pushed along rapidly and at the same time a close watch was being kept as to the progress of the fire. By Monday afternoon, December 19, the heat generated in the slope had caused the air current to change so that it ascended instead of descended the slope, also caused a reversal of the air current in the west gangway from the foot of the slope, which enabled the mine foreman to reach that gangway to the west of the fire, who, reporting that he thought it favorable to fight the fire from that side, Mr. Young went in with him and he also thought it advisable to fight it from that side or at least stay its progress westward. A duplex pump was placed at the No. 6 washery pumping station and a 4-inch pipe laid from it to and down No. 6 shaft to the Marcy vein and out through an upper tunnel to the fourteen foot vein,; from thence 2½-inch pipe was laid to the point on the lower gangway, at which it was proposed to begin fighting the fire back, and during the day a gang of men commenced fighting the fire from the other, or slope, end. A proposition was made to erect large tanks near the head of the slope which, when filled with water, would be discharged down the slope through troughs or sluices and so deluge the fire by water in that way. But it being quite as difficult for workmen to place the troughs or sluices in proper position to reach the fire as it would have been to handle and direct the hose near the fire; owing to the smoke and bad air this plan was not put into effect.

A suggestion, however, was made by Mr. George B. Smith, general superintendent, that a dam containing a large door be placed in the slope, this door being closed by long ropes extending up the slope and

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drawn up tight, then fill the slope above the door as far as possible with water and when a large quantity was thus collected to suddenly release the rope, allowing the large door to open and the accumulated body of water to rush down the slope without obstruction and thus flood it to a great extent and also the adjacent workings. This suggestion was discussed in detail and adopted and carried out in the following manner: There being but the two places, the slope and its parallel airway driven down through a solid block of coal, these two openings were used for collecting the body of water. About 350 feet down the pitch from the head of the slope, with a vertical height of 42 feet, strong wooden dams or flood gates were built across the two places in which rectangular openings 4 feet high and 5 feet wide were left. These were closed by heavy folding doors seven inches in thickness overlapping in the center by mitred joints faced with sheet rubber. The main timber work of these flood gates were 12x12-inch oak, the posts set about 30 inches between centers and let into caps and sill by bevel joints and back of these other timbers 8x8 inch, to which were spiked 3-inch plank. Hitches were cut into the top, bottom and sides to a sufficient depth to give good substantial joining of brick work with the wood work, this brick work having a thickness of twenty-three inches on the cap, including the planking. The posts were braced on the lower side by heavy oak braces from the roof and bottom. The joints in the planking were caulked with oakum. From near the corners of each door, heavy $\frac{3}{4}$-inch chains were attached by eye bolts passing through the doors. These four chains were united by a clevis at a length of twelve feet from the doors and this clevis attached to the cones of $1\frac{1}{4}$-inch wire rope extending to the top of the slope and its airway. On the top end of the ropes a cone and large link served to attach the rope to a heavy hook passing through horizontal oak timber let into the sides and further strengthened by braces. This hook had a right angle bend to receive the link on the end of the wire rope and a long thread by means of which the rope and doors were drawn up tight. In securing the doors the links on the upper end of the four wire ropes were slipped up on the hooks and blocking places under them to prevent their slipping off. The two ropes in each place were brought within about ten inches of each other at the top and fastened together by wooden clamps. The links were released from the hooks by removing the blocking and giving them a sharp blow with a sledge hammer.

Behind these dams or flood gates from 150,000 to 200,000 gallons of water were accumulated, each twelve to fifteen hours, and discharged down the slope. This process was continued until the workmen fighting the fire backward on the gangway had reached the foot of the slope and passed to the eastward of it.

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The last fire seen was on January 27, 1899, at a point just east of the foot of the slope, but the workmen continued removing the heated and burned coal and rock until they had completely surrounded it and continued the streams from three lines of hose until February 18.

The method adopted for flooding the slope (see sketch) was undoubtedly the proper one for the place, and saved the expense and almost ruinous alternative of flooding the several mines mentioned above. The work accomplished in fighting the fire backward along the gangway for more than 250 feet by means of hose streams and the removal of the burned and fallen material, as the workmen advanced amid the dangers from foul air, bad roof and sides, was no easy task and at times was almost discouraging, but the workmen braved the danger, the foreman closely watching and doing everything to insure their safety, and it is greatly to the credit of all concerned that not a single accident occurred during the whole time, except some sickness due to foul air.

The locating of the gates and dams and the placing of same and the adjustment in their working was successfully placed and worked under the immediate charge of Mr. Alex. Bryden, superintendent of mining, he having been ably supported by the following officials: Messrs. Andrew Bryden, James Young, James Y. Bryden and John F. Reynolds and other employes whose most faithful and untiring efforts were crowned with final success in a comparatively short period of time.

Destructive Cave-in of the Schooley Shaft.

On Monday, May 8, 1899, at 8.30 P. M., an extensive cave-in took place in the Pittston seam of the Schooley shaft, operated by the Pennsylvania Coal Company and located on the property of the Schooley heirs on the west side of the Susquehanna river, in the borough of Exeter.

The shaft was sunk from the surface to the Pittston, or Fourteen Foot, vein in 1883, by Nelson, Cowan & Dininny, the size of the main shaft being 10x24 feet. A few years later it was sunk from the Pittston to the Red Ash vein. A large breaker was erected over the main hoisting shaft, which was started up on September 3, 1883.

The second opening or air shaft, 10x18 feet, was sunk 500 feet north of the main opening and all the underground workings connected throughout the four workable seams. The depth from the surface to these veins is as follows: The first, or Checker, 182 feet; Pittston, or Fourteen Foot, 312 feet; Marcy, 390 feet to Red Ash or bottom vein, 582 feet. The total thickness of these seams are about 39 feet.