

## BURSTING OF THE CANAL, AND INUNDATION AT SHEFFIELD.

The canal from this town to Tinsley, a distance of about four miles, where it joins the river Don company's navigation, suddenly burst within half a mile of its Sheffield terminus on Thursday night, and caused very extensive damage by the inundation of the extensive warehouses and works of Messrs. Turton and Sons, the manufactory of Messrs. Eyre, Ward, and Co., and a number of cottage houses, and a public-house, lying between the canal bank and the river Don. Messrs. Turton and Sons' works cover an area of about three acres of land, and find employment for about 800 workmen in the manufacture of steel, railway springs, files, edge tools, and cutlery. The premises, with the exception of the rolling mill and tilt, were closed about eight o'clock on Thursday night, and the men who take the night-shift at the rolling mill and furnaces had commenced their labours. The works are situate on the left bank of the canal from which they are separated only by a private cart road. The upper portion of the works are about two feet lower than the surface of the canal, but the land gradually slopes, till at the further extremity the surface is considerably below the bed of the channel. About a quarter-past 9 o'clock Mr. Steel, the night foreman of the mills, was in the act of charging one of the furnaces with ingots of steel, to be heated ready for being passed through the ponderous rollers and formed into bars, when the square pitching stones which form the floor of the mill were suddenly thrown up for a space of several feet, and water spouted forth from the opening in such an immense volume that it was evident the place would be filled in a few minutes. He instantly gave an alarm to the workmen; but the mill was so speedily flooded, that they had not time to gather up their coats or any covering to protect them from the cold. They succeeded in escaping from the mill, and placing themselves on an elevated portion of the ground. A poor woman, wife of George Barker, the engine tender, was not so fortunate. She had brought her husband the provisions which he would require during the night, and had sat down in the engine house waiting his being disengaged. The inundation of the works, was, however, so complete, that within five minutes the mill, through which she had entered, was knee deep in water, and her husband, in order to rescue her, had to place a ladder from the top of the engine boiler to the window and lift her through the casement. It was immediately surmised that the inundation was connected with some casualty at the canal. The banks, on inspection were, however, found entire; but a whirlpool in the centre, down which the water was gushing with fearful force, shewed that the source of the mischief was the giving way of the bed of the channel. The water had then passed under ground through some old culvert or colliery working for a distance of about thirty yards, where it had forced its way to the surface inside Messrs. Turtons' works. In less than an hour, the whole of the machinery within the rolling mill and tilt was under water, the furnace, and the engine.

an hour, the whole of the machinery within the rolling mill and tilt was under water, the furnace fires extinguished, and the warehouses, file and edge tool workshops on the ground floor, were flooded several feet deep. The works are on a slight declivity, and surrounded with strong stone walls. The water being thus pent up, and having no escape except by the sewers, had accumulated near the file makers shops at the lower part of the yard, to a depth of eight feet, and the pressure of this large body had undermined the foundations in some places and threatened momentarily to carry away the outside walls. The outburst of such a body of water must have resulted in the destruction of a number of cottage houses on the opposite side of the road, and the drowning of many of the inmates. Inspector Lindley with a large body of the police were speedily upon the spot, and their efforts were directed to providing for the gradual escape of the water. To effect this, they commenced making a number of holes through the stone boundary wall. While the men were so engaged, Mr. J. Ward, landlord of the Effingham Arms, public-house, and owner of a number of cottages in Sussex street, opposite the lower end of Sheaf works protested against the proceeding, as the escape of the water at that point must inevitably flood his houses. Inspector Lindley pointed out to him, that the walls could not much longer resist the pressure of the mass of water inside; and that if they were washed down, the sudden outburst of the water would carry Mr. Ward's houses away, while, by allowing the water to escape more gradually through outlets in the walls this danger would be averted. Five or six holes were then made through the wall, and through these the water rushed in such a body that it tore up the pavements in the street; and following the declivity, crossed direct to the houses of Mr. Ward and some adjoining, belonging to Mr. Hancock, of Pea croft. Here the water was again retained by the walls of the yards at the back of the houses. The houses fronting into the two yards were in a few minutes five feet deep in water. The inmates were mostly in bed, but were aroused in great alarm by the gushing of the water into their dwellings. The neighbours who had gathered near called to them to remain in the upper rooms, and not attempt to escape. One poor woman, however, who had a pig in the yard, waded breast deep in the water to the pig-stye, and succeeded in rescuing the animal. A goit from the Sheffield gas works to the River Dun, runs along the lower side of the yard, and a hole being broken in the walls of the yard the water was carried off by the goit. The houses belonging to Mr. Hancock in the adjoining yard, escaped with less injury. The water on its first rush against the wall, washed it away into the goit, and the flood finding free egress by this course, the houses were not flooded more than two feet deep.

In the meantime, efforts had been made to stop the leakage in the canal. Mr. Codrington, the secretary of the River Dun Company, to whom the canal belongs, had mustered on the spot a large force of men, who vainly tried to fill the hole with stones, sacks of earth, straw, clay, &c., but without effect. A flat-bottomed boat was also sunk over the aperture. All these however failed in their object. The canal at the Sheffield end

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The whole of the lower part of Messrs. Turton and Son's works are yet under water, and the business almost entirely suspended. It is impossible to state the amount of damage sustained by the inundation, but it is feared that it will not be less than £2000 or £3000.

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## THE BURSTING OF THE CANAL.

Up to Wednesday last, parties were actively engaged in prosecuting the investigation into the origin of the bursting of the Canal, near Sheaf Works, detailed in our last. An excavation was made about 20 yards in length, in order to trace the channel along where the water had found an exit from the canal into the Sheaf Works yard, and after cutting through solid ground to the depth of fifteen feet below the bottom of the canal, the workmen found a drift or water level, evidently part of some old colliery workings. This drift crosses from the Park side under the canal nearly at right angles, and extends forwards under Sheaf Works. It will be remembered that the water first burst forth near the rolling-mill furnaces. The smoke from these furnaces was carried by means of flues under-ground, to a tall chimney adjoining the edge-tool hardener's shops. This chimney, which it will be remembered, fell during the night, was built immediately over the drift; its foundations extending very nearly to the roof of the drift, but not into it. This will account for the fact of the existence of the drift not being discovered when the chimney was built. A little distance beyond the chimney the drift way was found completely blocked up from the falling in of the earth above, or some other cause. This preliminary explanation will enable the reader to better understand what follows. The drift above alluded to as crossing under the canal, is formed in the Manor or Parkgate bed of coal, which at this point is four or five feet in thickness. The seam of the coal rises so rapidly at this point towards the surface of the land, that in the distance of ten yards on the town side of the drift, it terminates immediately under the bed of the canal. Branching from the drift, and running in a line with the canal to the extent of the coal seam, is a smaller drift or broad-gate. This terminates in what appears to have been a shaft communicating with the surface of the land, and which had probably been made for the purpose of obtaining air in the colliery working. The eruption of water through the bottom of the canal had not taken place on the site of this old pit shaft, but about midway in the length of ten yards between that point and the junction of this broad-gate with the driftway. The water had apparently followed the course of the drift-way to the point where it was found blocked up under the Sheaf Works. Its further progress being then checked, it had from the heavy pressure from above, forced its way into the foundations of the chimney and the underground flues of the rolling mill furnaces, and had then burst to the surface. The water from the canal had evidently lodged in great quantities in the old colliery workings, from the fact that for upwards of three hours after all the water in that portion of the canal between the two coffer dams had been carried off, there was still a continued flow through Messrs. Turton and Sons yard. The drift-way is known in the language of colliers as a footerill. It had no doubt had its entrance on the level near the old Blonk Dam, or the cut that adjoined it. Thence it ran southward into the hill, serving to dry an extensive portion of the coal field, and to carry out coal without the cost of raising it up a shaft. As no plans of the old workings are known to exist, it cannot be ascertained when it was made; but experienced persons consider that it must have existed for at least 100 and perhaps 200 years. It was no doubt made when the coal bed was worked by primitive means, on the account of the Lord of the Manor. The discovery of this channel seems to explain a fact that some years greatly puzzled the Sheffield Coal Company, and caused them much expense. When the engines at the Sheaf Works, in 1841, were repaired,

at least 100 and perhaps 200 years. It was no doubt made when the coal bed was worked by primitive means, on the account of the Lord of the Manor. The discovery of this channel seems to explain a fact that some years greatly puzzled the Sheffield Coal Company, and caused them much expense. When the engines at the Soap House Pit were erected, a considerable reservoir of water was made to supply them, But from time to time the water disappeared from that reservoir, and it was impossible to ascertain where it was gone to, as it had neither found its way into the pit nor into the canal. Vast expense was incurred in making the reservoir water-tight. It is now believed that the water found its way into this newly-discovered footerill, and so got into the Blonk dam or the river. Upon the premises of Sheaf Works great exertions have been made to minimise by every means the damage and the inconvenience. On Saturday, Mr. Chadburn, of Nursery street, attended with his camera, and took collodian pictures of the state of the ruins in several different aspects and positions. They furnish a series of remarkably striking illustrations of the amount of mischief and destruction which the inundation caused, and show the value of this process as giving immediate and indisputable representations of the state of a place at any particular time. These pictures are taken upon glass, and bid fair quite to supersede the original mode of depicting likenesses and scenes upon prepared metallic plates. One side of the glass is first covered with a transparent glaze of collodian, a substance prepared by the solution of gun-cotton. It is next in-



mersed in a bath of nitrate of silver. A coating of silver adheres to the collodian. The glass is then placed in the camera, and the object to be depicted is reflected upon the glass, on which it leaves its representation. The next process is to dip the glass in a solution of sulphate of iron, which brings out the picture, but in a confused and misty state. The cyanide of potassium is next employed. It clears away the nitrate of silver from the parts where it is not required by the picture, and leaves it a finished drawing, such as no artistic skill can equal. The pictures of the daguerreotype require about fifty seconds to complete them, but by this process they are completed in ten seconds; and we apprehend it will be found that this difference, in time, will have a great effect in causing the portraits taken by the new process to be vastly superior to those of the old. But entirely apart from this, the value of the invention in preserving accurate representations of the state of any locality at any particular time, must be obvious to all.

On Wednesday, the workmen of the River Dun Company commenced re-filling the excavation, and securing the bottom of the canal. Their work was yesterday so far completed that the company's engines, at Tinsley, commenced pumping water into the canal, which is expected to be open for traffic to-day or Monday.