

Please read and send in as full a
discussion as possible at earliest date.

The Canadian Society of Civil Engineers.

INCORPORATED 1887.

ADVANCE PROOF—(*Subject to revision.*)

N.B.—This Society, as a body, does not hold itself responsible for the statements and opinions advanced in any of its publications.

THE MINE FIRE AT DOMINION NO. 1 COLLIERY, GLACE BAY, N.S.

By SHIRLEY DAVIDSON and NORMAN MCKENZIE.

Dominion No. 1, which is one of the oldest collieries in Cape Breton, was first mined by the General Mining Association in 1831.

It was abandoned for some years prior to 1893, when it passed under the control of the Dominion Coal Company, who sunk the present coal, air, and material shafts and equipped the mine with the most modern machinery, such as endless haulage systems, compressed air, self-dumping cages, electric haulage and electric lighting. The mechanical equipment on the surface consists of: Babcock & Wilcox boilers, of 1,696 rated H.P.; one coal hoist engine; one man hoist engine; two 26" x 60" haulage engines; three fans, 24 feet, 12 feet, and 8 feet, respectively, with capacities of 200,000, 75,000 and 25,000 cubic feet of air per minute; three air compressors in three units of 2,600 cubic feet each per minute; and one 100 K.W. electric 250 volt generating unit.

The bankhead consists of a steel structure equipped with up-to-date appliances for picking and screening the coal and delivering it to coal cars, and also to the colliery boilers and locomotives by means of 14" and 12" Robins Belt Conveyors.

Underground there are in use 62 horses, 46 mining machines and 340 pit tubs.

The colliery at the time of the fire was producing on an average 55,000 tons of coal per month, and employed about 800 men.

There are three shafts sunk and used severally for coal, air and material. The main or coal shaft generally used as an upcast—although the current may be reversed—is 154 feet deep from surface to rail, 10½ feet wide by 24 feet long, and consists of three compartments, two for coal and one for men. It is sunk below the pavement to a depth of 7 feet in order to bring the cage platform level with the mine track. The Fan shaft, 143 feet, 11 feet in diameter, can be connected to either of the three fans, and is generally used as a downcast. The material shaft, 135 feet deep, is 10 feet wide by 18 feet long, and is also used for the endless haulage ropes, which are brought to the engine-house located on the surface directly alongside.

These shafts are sunk about 1,900 feet from the crop. The surface in the vicinity is 89 feet above sea-level, while the pavement is 68 feet below sea-level. The surface from the shaft slopes gently to the shore line of the Atlantic ocean, distant 1,800 feet, where it breaks away abruptly in low cliffs, exposing the seams of coal and the remains of some old workings, supposed to be those of the French many years ago.

The seam worked, which is remarkably exempt from upthrows or downthrows, is known as the Phalen. It averages about 8' 4" of clear bituminous coal.

The dip of the seam is in an easterly direction, the angle or inclination of dip being about 1 in 15. The floor of the mine is a very gritty shale, and the immediate roof is also a shale, which readily falls at times, but is easily supported by timber. The plan of working is the ordinary "room and pillar"; the deeps, headways and levels are driven 12 feet wide, and the rooms 22 feet wide.

The size of the pillars left at present is 25 x 70. The present faces of the workings have reached a distance from the shaft of 5,700 feet in the North deep, 5,400 feet in the South deep, and 3,000 feet in the Angle deep.

The overhead cover at the face of the North deep is 519 feet in thickness of strata.

The mine made some 500 gallons of water per minute, but had also to take care of 800 gallons per minute from the Main and French slopes of Reserve, which quantity passed through a bore-hole in the barrier separating Dominion No. 1 from Reserve, and flowed along No. 3 South level to the water lodgement on the back North deep, from which it was pumped to the lodgement at the shaft bottom through a 7" pipe. There are three water lodgements in the pit. One of 500,000 gallons capacity is located at the shaft bottom, one of 500,000 gallons capacity is about 2,000 feet from the

shaft on the North back deep, one of 900,000 gallons capacity is at the face of the South deep as shown on the plan. The first two are connected as noted above, by a 7" pipe laid up the North Main deep, the lower pumping into the upper from two 14 x 8½ x 33, three hundred gallon Cameron pumps: the upper then discharges vertically up the shaft to the surface through one 300 gallon Cameron pump. The lodgement at the face of the South Deep contains a 1,000 gallon duplex pump, which discharges vertically 430 feet through a borehole into International Mine, from whence it flows by gravity to the sea. Another borehole driven from the surface, 519 feet in depth, contains the steam and the exhaust pipes one within the other. Steam is supplied by the boilers at International Mine, located on the surface almost directly overhead.

The underground workings of Dominion No. 1 cover an area of 560 acres, and had produced from this area while under the management of the Dominion Coal Company, approximately 3,400,000 tons up to the time of the fire.

Inflamable gas is met with in very small quantities in the workings, but an efficient amount of ventilation is maintained by a powerful 24 feet Dixon fan, which circulates 114,000 cubic feet of air per minute with one inch water gauge.

A water service is maintained for boiler supply and other purposes on the surface through a 6" pipe leading from a small stream distant about a mile from the Colliery. An efficient supply is kept up by a 250 gallon 14 x 8 x 12 Knowles pump. The stream is dammed, and forms a reservoir capacity of 7,000,000 gallons on the edge of which is located the boiler, pump and pump-house.

About 3.30 in the morning of Thursday, March the 19th, 1903, a workman returning from work discovered fire in a cross-cut between the Back and Main North Deeps near No. 3 Landing, about 1,200 feet from the shaft bottom and about 147 feet below sea level. The opinion is that it was started on the back deep side of the stopping by a workman carelessly throwing away the lighted wick from his lamp, or, contrary to all rules and regulations, kindling a fire in order to warm tea. This back deep is used as a travelling road, and the stopping in question was the same as all others built in the cross-cuts in the pillar between the Back and Main North Deep. It was composed, as most of them are, of hemlock boards lined with brattice cloth: the average width of this particular cross-cut was 12 feet. Some loose boards were lying alongside, and it is probable that some rubbish had also collected, as is generally the case in the waste places of mines. On account of the location, the fire was an exceedingly difficult and dangerous one to deal with. Alongside of it to the North was an old and abandoned section, where some time previously a bad crush had

made it necessary to protect the pillars along the travelling road with a considerable number of props lagged behind. The workman who made the discovery, instead of making any attempt to stamp out the fire, as might have been done in this early stage, fled to the shaft bottom. This he reached after a difficult passage through the smoke, which quickly collected and poured up both North Deeps with the air current to the shaft.

He gave the alarm to the Underground Manager, who with an Overman immediately travelled directly towards the fire, through the smoke, on the Back Deep. Orders were given to the bottomers to follow down with buckets. When within seven hundred feet the glare of the fire was distinctly seen, extending across the Deep, and when the cross-cut was reached, the place was a mass of flames, and the top of the coal was scaling.

A shovel—the only appliance at hand—was of no practical use; it was impossible to get about the fire, on account of the dense smoke, and the Underground Manager, seeing that the fire was beyond his control, with the limited assistance of one or two men at hand, made for the shaft bottom for proper appliances and more help. The men at the bottom refused to give this, so he started back alone, but this time by way of the Angle Deep and No. 6 North Level, when he met some miners, who followed him to the fire.

Orders had been given to send down hose to connect with the seven-inch discharge from the lodgement nearby. The first lot was abandoned on the Angle Deep so that this connection was not made till the arrival of the second lot, by way of the South Deep.

Assisted by the air current, the smoke quickly gathered in volume, and barred all entrance to the pit by way of the shaft. Mr. McKenzie, the Manager, who was immediately notified, was compelled to enter the Pit by the travelling slope, which is driven from the crop about 1,300 feet north of the shaft. He first reduced the speed of the fan. On the way down he gave orders to remove the horses, but all were suffocated before this could be done. As travelling by either of the North Deeps was impossible, he proceeded over the air crossing at the fan shaft bottom and through the fan shaft to the South Deep, and down the South Deep to the fire.

Timber and brattice were then put up across the main deep as the only possible means of excluding air from the fire.

The seven-inch discharge line from the lodgement nearby was broken, and after considerable delay in receiving the hose, two lines were connected to it. One was carried directly to the fire cross-cut, while the other worked through the first cross-cut above the fire in the Main North Deep.

By this time the Back Deep had already fallen, so that it was impossible to follow the fire through the cross-cut, where it had started, and the work of extinguishing was therefore practically confined to the Main Deep, which was not so badly fallen, and therefore more accessible. The opinion is that had the fire been confined to this deep alone it could have been extinguished with the water and hose available, but it was quickly travelling up the Back Deep and darting through the cross-cuts to the Main Deep, above the point where the men were stationed.

The morning of the fire it was difficult to persuade the men to work, as the conditions were very similar to those at Caledonia not long before, when a fire broke out in that Colliery. There an explosion occurred, causing the death of eleven men, including the Underground Manager, who had formed a party to locate it. In both cases the fire was near old and abandoned workings filled with damp. This made the men nervous and afraid for some time, but after the first day there was no difficulty in obtaining all the men required.

The Managers from the different collieries came and brought with them their subordinate officials and any men who had had experience with fire in a mine. These were organized in three shifts, of eight hours each, one of the Managers being in charge of each shift, with a mine official leading each gang. Each shift was composed of five gangs who fought the fire from different points.

The Fire Brigades from Glace Bay and Sydney composed some of these gangs, and brought with them all the available hose. Besides those fighting the fire, a gang on each shift moved coal cars, mining machines, mine tools, etc., from the pit. Another was kept busy sending down material, such as brattice cloth, timber, etc., while a third took charge of the ventilation, and was supposed to travel all the places clear of fire and smoke and to see that no gas accumulated in any part of the mines.

Two more lines of hose were now laid from the material shaft down the South Deep and across to the Middle Deep, one working from the top cross-cut, into the Main Deep, while the other was carried down to the next cross-cut in the middle deep. An ample supply of water was kept on these by means of two 500 gallon pumps, which were temporarily set up alongside of the railway by the dam and driven by steam from a locomotive standing on the track. Two lines of wrought iron pipe 5" x 4" respectively were laid from this point along the surface to the shaft where the hose were connected and dropped to the bottom. It was now impossible to ascertain the distance the fire had travelled towards the pit bottom on the Deep Back, as the only two cross-cuts available were those between the Middle and North Deeps, and these were being

made use of to fight the fire on the Main Deep. Smoke barred all other passages to the Back Deep. This being the case, an attempt was made to reach a point 600' above the fire cross-cut, on the Back Deep by following down the old horse-road north of the Back Deep. After several attempts this point was reached, but the smoke was so thick and the heat so intense, that while only a short inspection could be made, it revealed the fact that the Back Deep had fallen in up to this point, although no fire was in sight. A line of hose which had to be carried along to this point was left open. The drain which carries some of the water from reserve through the rise workings of Dominion No. 1 amounting to from 500 to 1,000 gallons a minute was also diverted to this point and allowed to flow into the Back Deep.

As contrary to all expectations the fire was not seen at this point, another attempt was made to reach it in this crushed district through room 30, which intersects the Back Deep a short distance above where the fire started. The object of this was to find out if the fire had worked its way through the stone stoppings which separate the back deep from the crushed and abandoned area, and also if possible to break through these stoppings and adopt the same method of fighting as on the Main Deep, namely before and behind. This method promised reasonable hope of success.

On the night of March the 23rd, 1903, after a very difficult and dangerous passage along room 30, a point was reached 750 feet from the Angle Deep and 200 feet from the Back Deep stopping, where it was discovered that the fire was making way into the old rooms. The necessary pipe had been laid down the angle deep and hose had been carried along to this point and were ready for use, but to attempt to extinguish the fire by this means in this old and abandoned section with its scores of openings, dangerous roof and stone filling was absolutely useless and a waste of time.

The work of fighting the fire from behind on the Main Deep and watching it at the first cross-cut from the Centre Deep was continued under the most disheartening circumstances, for the conditions were most unfavorable, as the section was the worst in the mine. The behaviour of the men was splendid, although they knew fire damp existed, and there was constant danger of an explosion; and in spite of smoke, heat, and falls of roof which drove them back time and again, they stuck to their posts till all hope of saving the mine was abandoned.

The fire was now travelling so rapidly, that fears were entertained for the safety of the shaft, the loss of which meant the loss of the pit. A careful survey was made of No. 4 North Landing,

to ascertain if it was possible to construct dams of sufficient strength to retain water in this section, but the pillars were so badly crushed and the roof so badly fallen that this was considered impossible, especially as time was of so much consequence.

The question of submerging the whole of the north side was abandoned for the same reasons. In the meantime two dams had been built across the roads connecting the North and South Deeps in order to protect and keep in operation the big 1,000 gallon pump, which took care of the water from the lower section of the pit. These withheld a considerable amount of water in the north side and kept the pump for the time being from being submerged by the water which was now entering the pit in considerable quantities through the hose and drainage from Reserve. In order to ascertain how far the fire had travelled up the Back Deep during this time, Mr. McKenzie and several others after several unsuccessful attempts, in which the lamps were extinguished by damp, finally succeeded in reaching through five feet of water a point 600 feet above the fire cross-cut, where it was discovered that the fire had passed this point, and was quickly approaching the shaft.

After this discovery on Saturday, March 28th, 1903, nine days after the fire started, complete submersion was decided upon. All the mining machines, with the exception of two, 280 pit tubs, all miners' tools, all horses, including the dead, were removed from the pit, together with parts of the electric locomotive. The mine was then sealed as closely as possible to prevent a supply of oxygen entering to the fire, but it had been worked in many places under a cover of only 100 to 200 feet, and the falls caused by drawing the pillars had extended to the surface, and thus made it impossible to exclude the air completely, even after taking all possible precaution. This was later proven by analysis of the gases taken after the mine was sealed. As can be seen from the results given below, the Carbon Dioxide was very much higher on April 30th, than on May 10th, which shows that the fire could not have been extinguished by the method of excluding the oxygen under existing conditions.

	CO ₂	O.	N.	CO.
April 30th	4.0	2.4	93.2	0.4
May 2nd	4.8	5.4	39.8	0
May 4th	5.2	3.6	90.8	.4
May 5th	5.4	4.0	90.4	.2
May 7th	4.4	6.8	88.8	.0
May 9th	2.4	10.6	87.0	.0
May 10th	3.6	8.8	87.6	.0

No time was lost in turning on water from all the available sources of supply. Through an old room in the rise workings, a drain was driven through to the crop to catch the water of a small brook flowing by this room. One 1,000 gallon Northey pump and two portable boilers were set up on the shore of Langan Bay, distant 800' from the travelling slope. An 8" pipe was laid between these boilers and the mouth of the slope. This water, together with that from the small brook, united with the drainage from Reserve, and flowed down the travelling road into the Back Deep 700' above the fire cross-cut. This amounted to 1,350 gallons per minute, or in the fifty days from April 1st to May 20th, 97,000,000 gallons. It was estimated that 516,000,000 gallons were necessary to bring the water to a level that would cover the fire area which now extended nearly to the shaft bottom.

To have filled the mine from this supply alone would have taken many months. To hasten the submerison, it was decided to call into requisition the waters of the Atlantic. A tunnel 119' long 6' high 6' wide was driven in from the shore to the nearest room, which was Number 2 room, Number 1 landing on the Angle Deep. This was driven in four days, or an average of 30' per day by machine cut, for which an air line had been laid along the surface from the compressor house. The coal was loaded in a tub placed on the track laid for the purpose, and hauled out to the shore by hand. While the work was in progress a temporary dam was constructed across the opening, in order to seal off the pit at high tide, when it would otherwise have filled the tunnel, and delayed the work. This was composed of two walls of three inch plank separated by an eight inch space, which was filled with concrete. A sliding door four feet by four feet located above high tide, afforded a means of entrance and exit to and from the tunnel. Beneath this, after completion, another door four feet by four feet was cut and used as a means of regulating the flow of water into the pit. The sea was first let in on April 7th and finally closed on May 23rd—a period of 46 days—but the flow of water was not continuous. The actual time of flow in this period amounted to fifteen days, during which it is estimated that 420,000,000 gallons entered the pit at a rate of 28,000,000 gallons every 24 hours. 96,000,000 gallons entered by the other means mentioned, which totals 516,000,000 gallons. This brought the water level with the bottom of the shaft.

After the pit was submerged the opening was stopped by a permanent dam, which consisted of 92 pieces of spruce and hemlock 10 inches by 10 inches at one end, and eight inches by ten inches at the other end, each piece being faced on two sides with one inch pine boards. Its thickness was about seven feet. Through the lower portions of this dam a 17" diameter pipe was laid with a plug

at the lower end, which was forced into the pipe by the pressure of the sea when the flooding was completed.

Readings of the rise of water in the pit were taken by means of a float and wire dropped down the borehole to the face of the South Deep. The waters of the sea were shut off from time to time on the assumption that large quantities were withheld in the upper workings by falls and other obstructions, as the bore hole readings showed that water raised the level at the bore hole for several days after the sea was closed.

Another source of anxiety and cause of delay in flooding was the question of strength of Reserve Barrier. Below No. 5 South Level of Dominion this was sufficiently thick to withstand the pressure brought to bear on it, but above that point or from the bottom of Reserve Main Deep the surveys showed varying thicknesses. The water from the Main and French slopes of Reserve flowed through a borehole driven through the barrier at a point in the face of No. 3 South Landing of Dominion, and here the thickness was 53 feet. The face of the Reserve Main slope is 198 feet below sea level, which when the water was on a level with the bottom of the shaft was under a level of 130 feet, or 57.2 pounds per square inch, which equals 4.1 tons per square foot. To guard against any possibility of accident through the failure of the barrier, and in order to protect the workings of Reserve other than those of the main slope, two dams consisting of 10" x 10" spruce and hemlock laid in two walls with four feet of concrete between were built across the narrow places of No. 10 Landing, which was the only connection between the main slope and the rest of Reserve. The barrier however proved effective. The water worked through the strata and came in in considerable quantities through the roof between No. 9 and No. 11 landings, but outside of heavy condensation on the face of the barrier no other noticeable features developed.

The filling continued as above described until the readings taken at the borehole indicated that the water had reached the bottom of the shaft, but a float lowered into the shaft showed that the water had not reached this point. A close examination of the borehole was then made, and it was found that water bailed out by a bucket lowered the water about 25 feet, showing that the readings taken were not a true indication of the rise of the water in the pit. This method was therefore of no value, and, without any other gauge, the regulation of the flow of water became a matter of judgment.

On April 30th, 21 days after the mine had been first sealed, steam in place of smoke began to issue from the test holes in the shaft, proving that the water instead of being on a level with the

bottom had apparently only reached the fire territory. An additional 250,000,000 gallons was therefore necessary to cover this.

Great care was taken to keep the water from actually covering the shaft bottom, as a rise above that point would entail much extra labor and loss of time in pumping out, for then the pumping would have to be started by way of the travelling road and by placing some pumps in the shaft. To provide for this emergency an air line was laid from the compressor house to the mouth of the slope but there was no necessity to make use of it.

On May 11th the pit was opened, and the fan started, but smoke made its appearance. The pit was again closed, more water was let in, and again opened on the 23rd May, when no smoke was found. On May 23rd a small hatch 7" x 9" was opened in the coal shaft, and at the same time a trap-door was opened in the tunnel at the shore. The air therefore travelled from the trap door at the shore across the fire district and up the coal shaft.

Parties were organized for searching, underground relief, and superintending operations on the surface. The underground party entered the pit by the travelling slope. Considerable damp was met with, but great care was taken, and no accidents happened. The temperature reached 114°.

Another party which entered the pit by the tunnel at the shore was once driven back by damp, but next day succeeded in connecting with the party on the travelling slope.

On May 24th 7.30 p.m., the fan was started exhausting, and the main shaft was uncovered. From this time the work of opening up and arranging for pumping out the pit were vigorously carried out. The water had risen to the shaft bottom, but the pump, although partly covered, was started on May 30th, 1903.

One of the greatest mine pumping propositions was now before the Dominion Coal Co. Time was of great consequence on account of the demand for coal. The total quantity of water required to be pumped amounted to approximately 516,000,000 gallons, besides what the mine made through feeders and falls amounting to 500 gallons per minute. When it was decided to flood the pit, telegraph enquiries had been sent to all pump makers for prices and sizes of pumps on hand for immediate delivery, and it was a case of taking almost anything that could be immediately shipped, and the material and machinery bought for this purpose consisted of the following pumps:—12 Knowles Duplex 14 x 18½ x 10—500 gallons; 4 Smith Valle Duplex, 14 x 9 x 12—600 gallons; 4 Jeansville 12 x 8 x 18—600 gallons; and two Worthington, 14 x 12 x 10 Duplex—1,000 gallons; making a total number of 22 pumps of a total capacity of 12,800 gallons per minute. The pipe

amounted to 27,000' of 8", 24,000' of 6", 900' of 12", 900' of 10" and 26,000' ranging from 5 to 2½ inches.

On the two South Deeps 8 pumps were worked, which discharged to the surface through four 8 inch pipes. They were arranged in sets of four on each deep, two pumps connecting to one 8 inch discharge.

These sets were staggered and moved down the deeps whenever the suction reached a length of 350 feet. The North Deeps down to the fire were so badly fallen that pumping could not be continued in them. Four pumps were therefore carried down the Angle Deep and discharged up the shaft to the surface till No. 1 Landing was reached when discharge lines were laid along this to the tunnel opening to the sea, thus cutting off 80 feet of head. The pumps on this deep were carried along on a suction of about 450 feet until No. 4 Level was reached, when they were moved over to the Centre and North Deeps, discharging to the sea through four 8 inch discharge lines.

When the water receded below the lodgement on the North Deep this lodgement was used as a second lift. Five pumps were placed at this point, and water was delivered to them by the four working down the Middle and North Deeps. The eight pumps working on the South Deeps were then pumping to the pit bottom lodgement from which four large pumps pumped to the surface through the material shaft. The pumping was of necessity at times very slow on account of the numerous falls which had taken place by the shifting of pumps and by the resumption of mining before the pit was clear of water.

On May 30, 1904, just one year after the beginning of pumping operations, the mine was completely pumped out. Besides the 516,000,000 gallons which filled the mine, the mine was making about 500 gallons per minute during this period, which amounted to approximately 276,000,000 gallons. The total number of gallons pumped was therefore 792,000,000.

Not taking into account the work done by the pumps at the second lift, the performance of the pumps was as follows:—

Knowles	47,846	hours.
Smith Vale	9,640	"
Cameron	111	"

The results show that the Knowles and Smith Vale and Cameron pumps worked constantly during this period at an average of 50% of their capacity or at the rate of 250 gallons per minute, or 15,000 gallons per hour of the Knowles and Smith Vale, and 12,000 gallons per hour for the Cameron.

The Air Compressors which kept these pumps in operation were worked to their full capacity. To relieve them the pumps located around the lodgement at the shaft bottom were driven by steam.

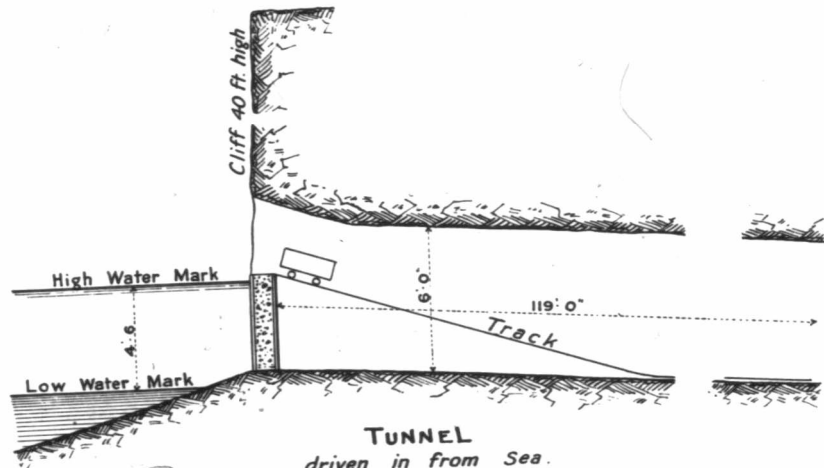
The action of the gases from the fire on the pipes, ropes and iron work around and in the coal shaft was very destructive. All the rope and pipe that had been exposed to it were so badly eaten that complete renewals were necessary.

In the fire section of the mine both deeps on the north side had fallen completely to a height in some places of 12 and 15 feet, as shown by the crossed shading in plan. In very few places was it possible to crawl over these falls. This necessitated much labor and expense in cleaning, tunneling and timbering to place the travelling road and haulage way in a fit condition for operation. Even if it had been possible to do without the use of these roads, the shale and roof coal were found to give off a certain amount of heat, on the haulage road particularly. For this reason it was considered better to clear it out than to run the risk of the fire starting again on this deep. There was no apparent reason why the temperature of this material should have been so much higher than at any other place to which there was access, unless the dust, which was very fine, combined with oil dropped from the pit tub axles made the condition more favorable for spontaneous combustion, and with the enormous weight of the roof that had fallen, pressing upon it, excluding the air current.

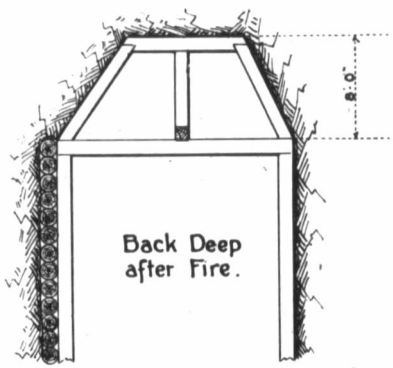
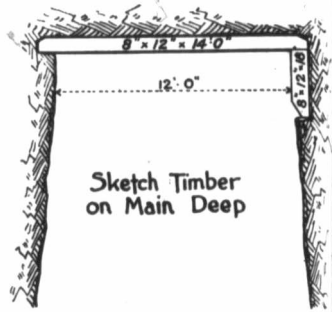
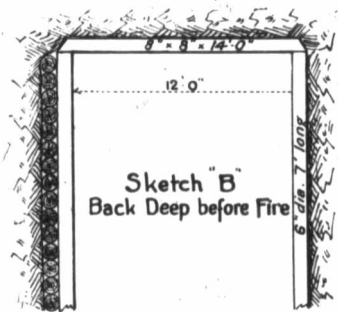
The stone removed from the falls amounted in round numbers to 25,000 tons, and was removed from the pit. This does not include about an equal quantity which was removed from falls when reaching the working face, as this was stowed in the mine.

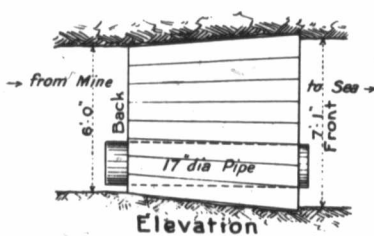
The places where these falls had taken place were newly-timbered. About 3,000 booms were put in besides props, etc., used for lifting. In some places where the roof was very heavy props were used in the centre of the boom, but generally the booms were placed in the rib or pillar and required no prop. Props were, of course used and lagged behind where the pillar was crushed.

No harm was done to the shaft, but around the shaft bottom, as shown on the plan by parallel shading, the action of the heat on the roof made it necessary to bring it down to a height of two feet, which greatly improved the condition of the roads about the place.

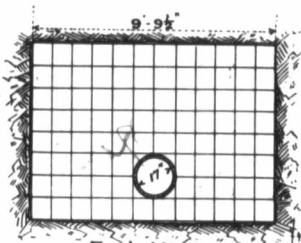


TUNNEL
driven in from Sea.
**2 Room *1 Landing Angle Deep*
Distance driven 119 feet.

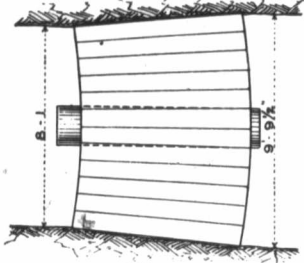




Elevation



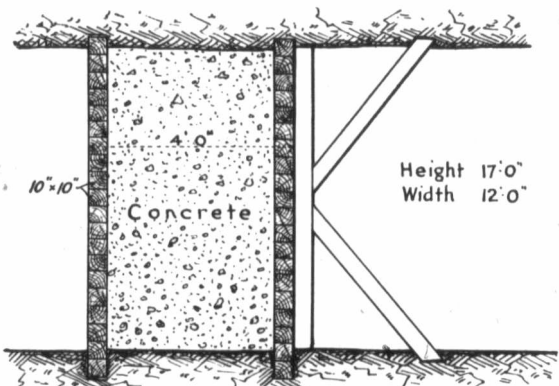
End View



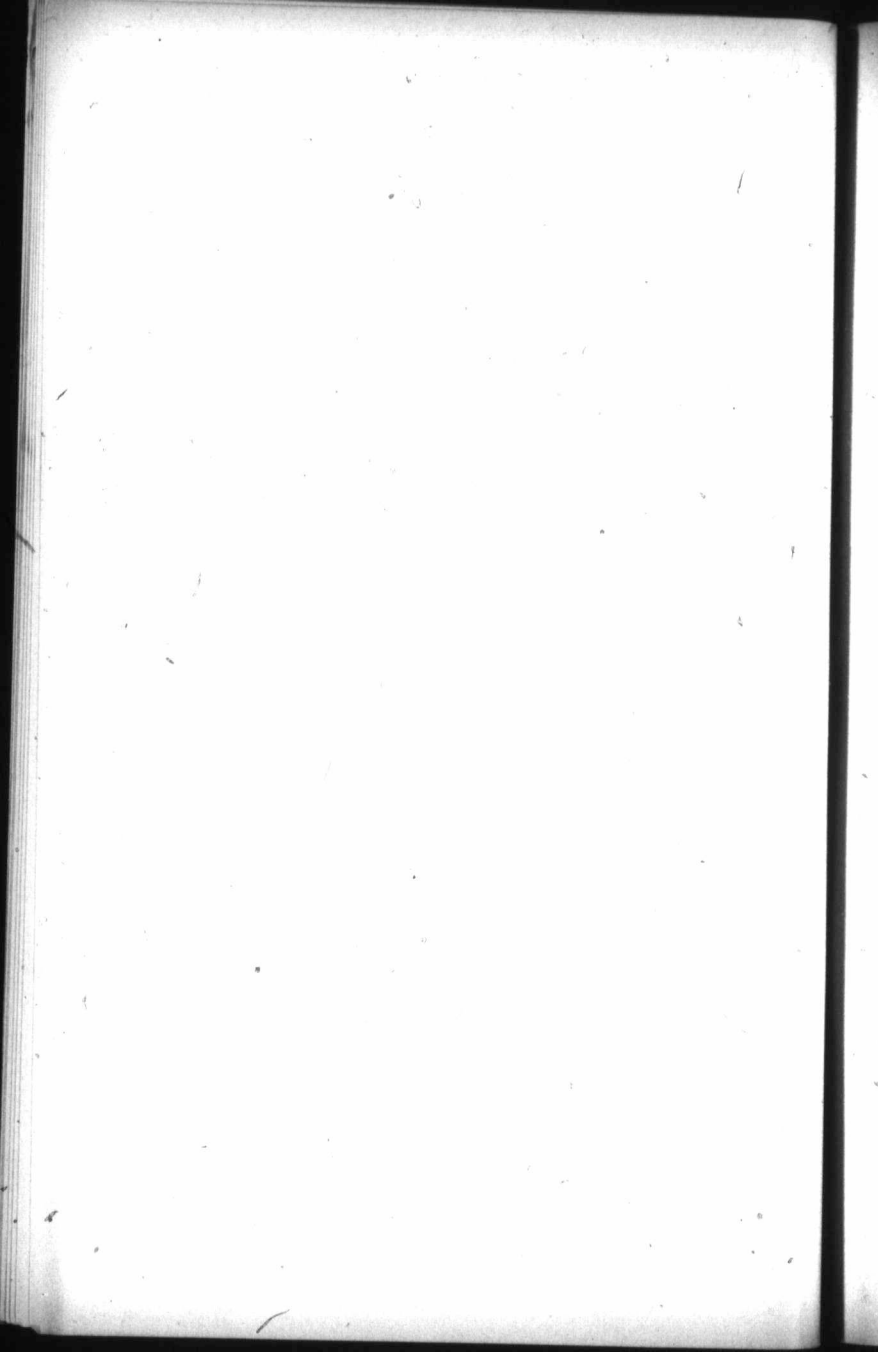
Plan

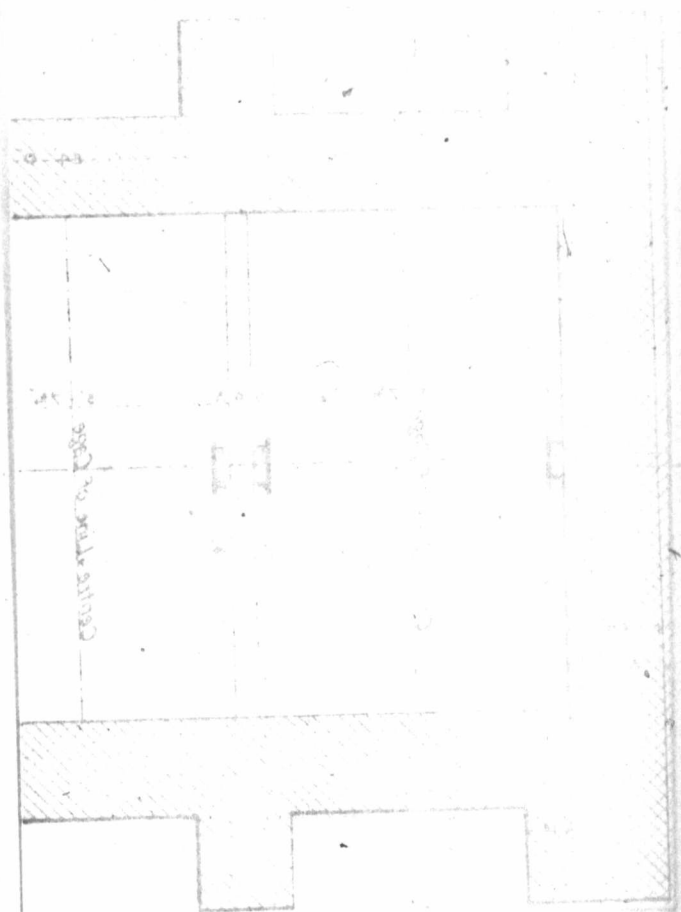
FRAME DAM

*built in Tunnel connecting
 Mine with Sea
 made up of 92 pieces spruce
 & hemlock 10" x 10" at large end.*



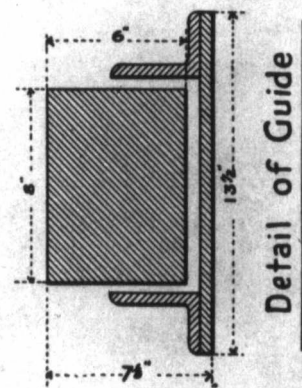
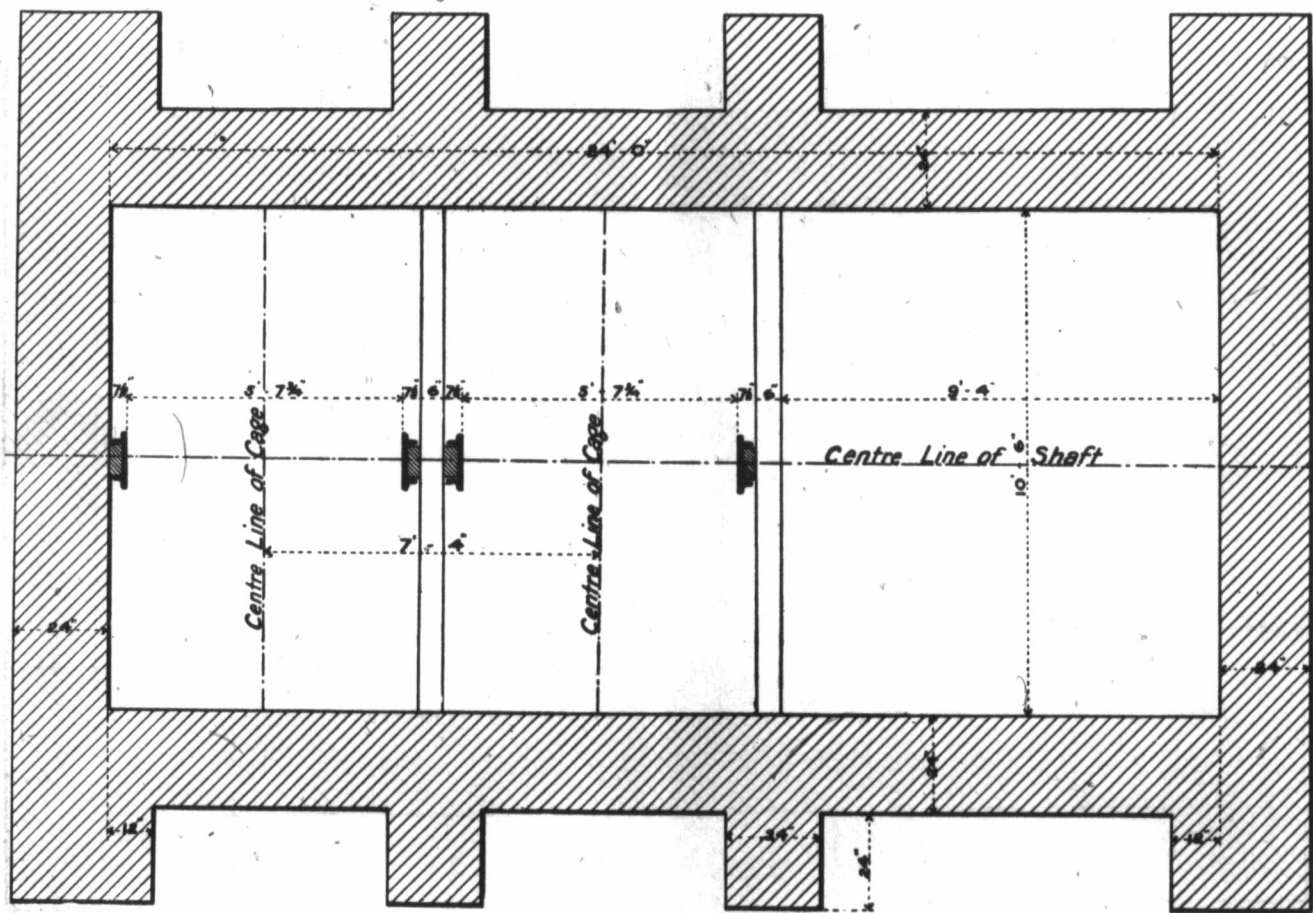
WOOD & CONCRETE DAMS
*On Level connecting Main and
 French Slopes of Reserve.*



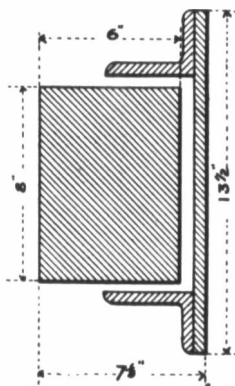


COURT AT THE END OF THE ROAD

W

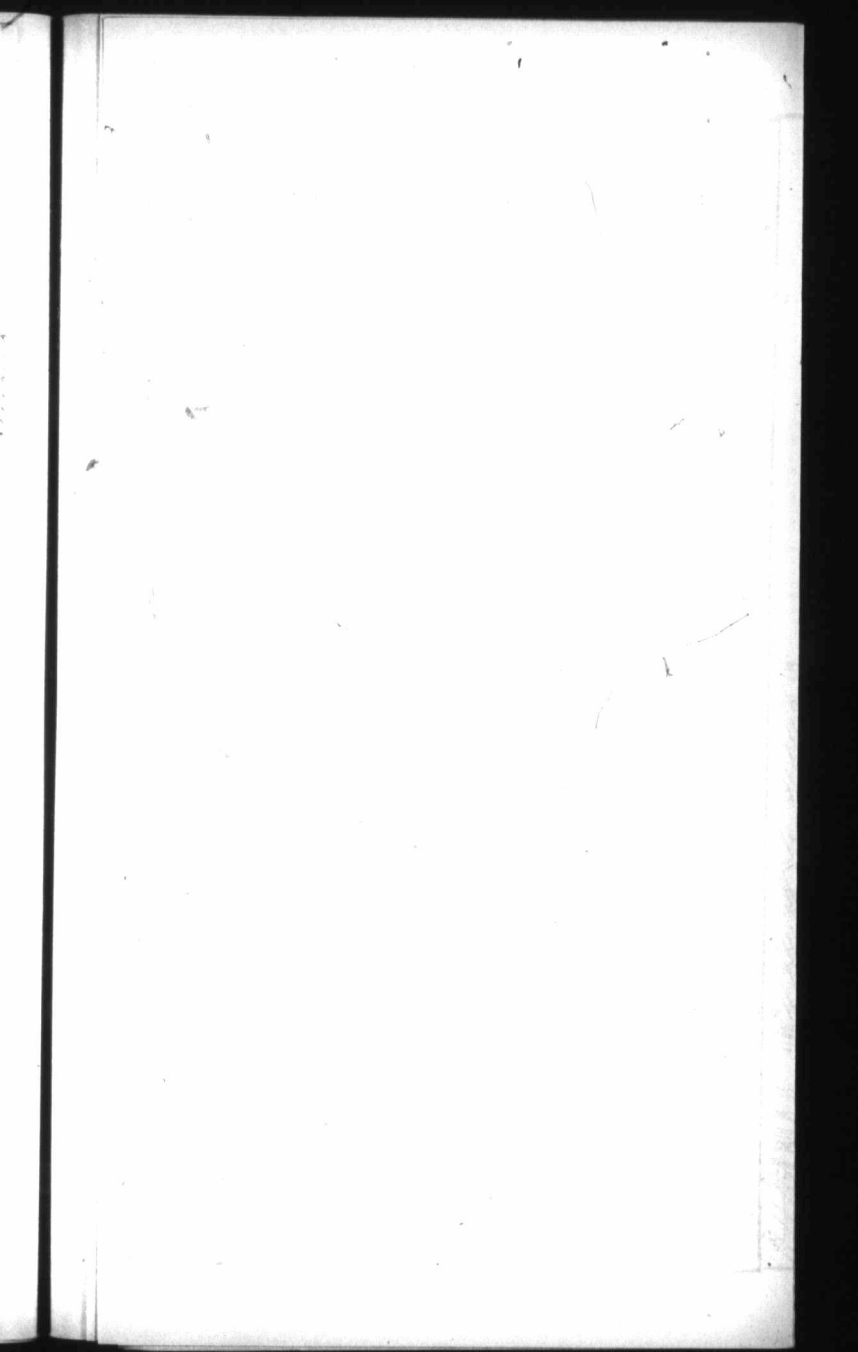


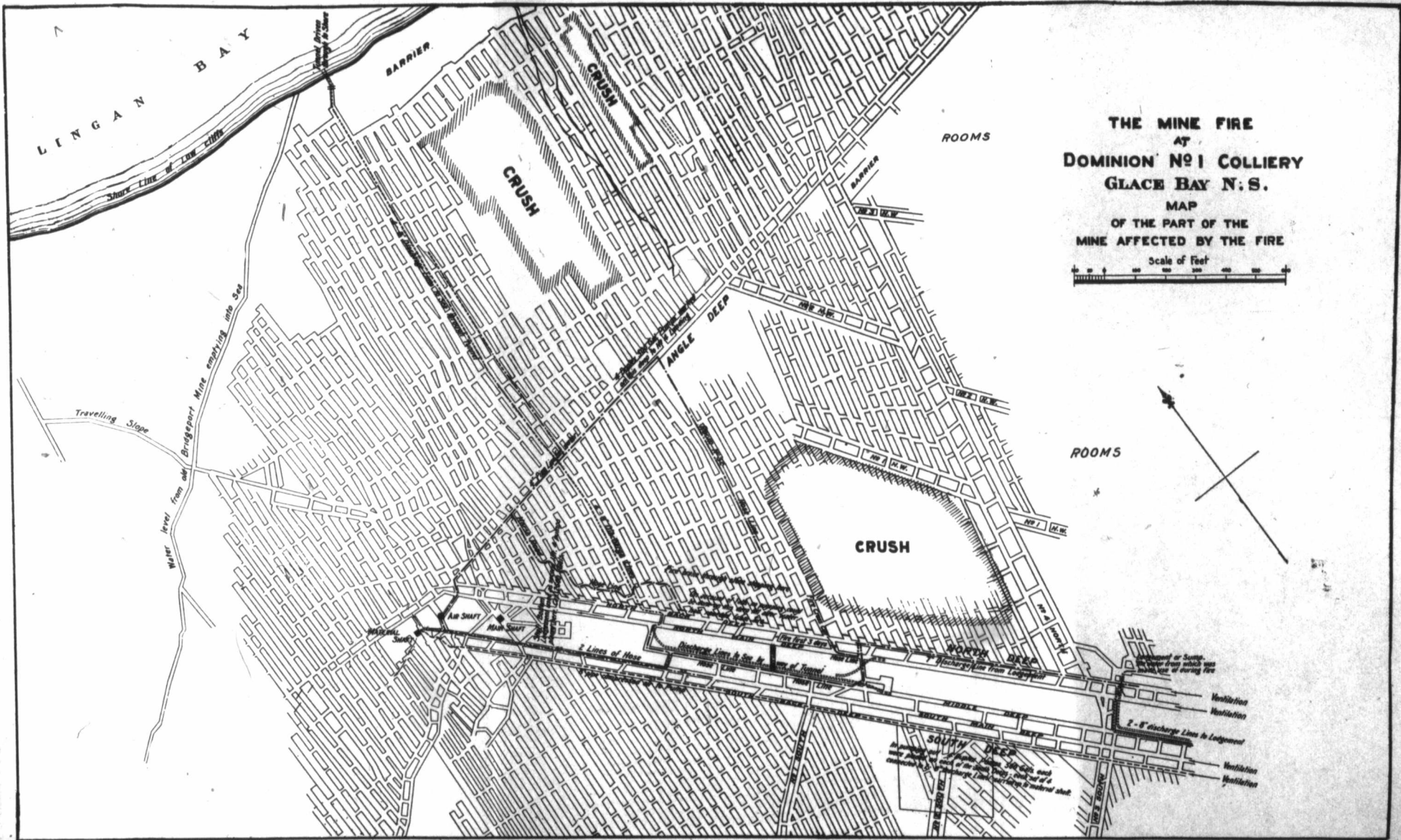
PLAN OF SHAFT
 AT
 DOMINION No 1 COLLIERY.



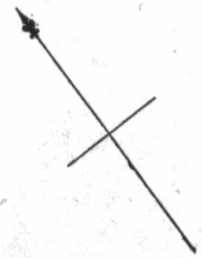
Detail of Guide

PLAN OF SHAFT
 AT
 · DOMINION N^o 1 COLLIERY.



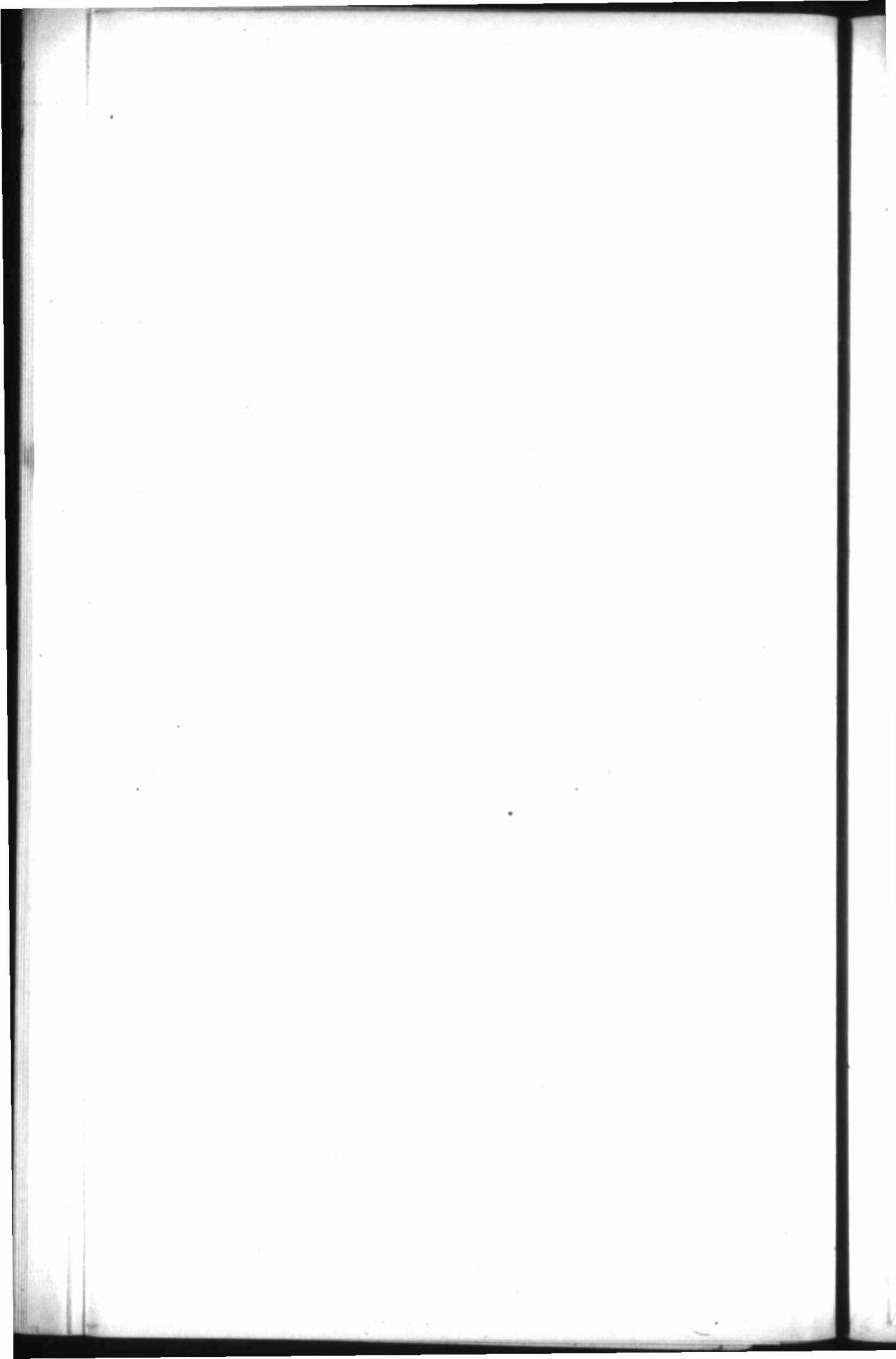


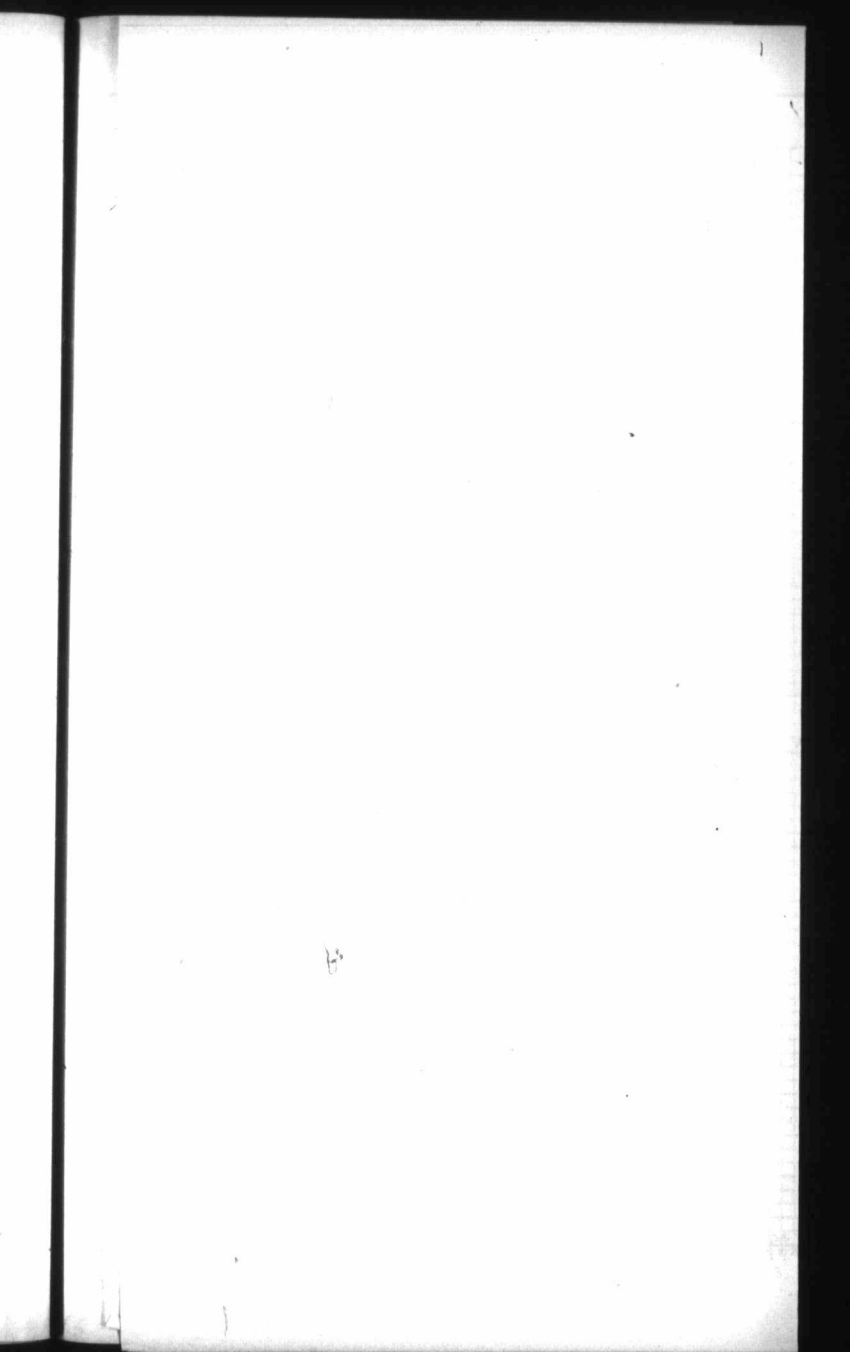
THE MINE FIRE
 AT
 DOMINION NO. 1 COLLIERY
 GLACE BAY N. S.
 MAP
 OF THE PART OF THE
 MINE AFFECTED BY THE FIRE



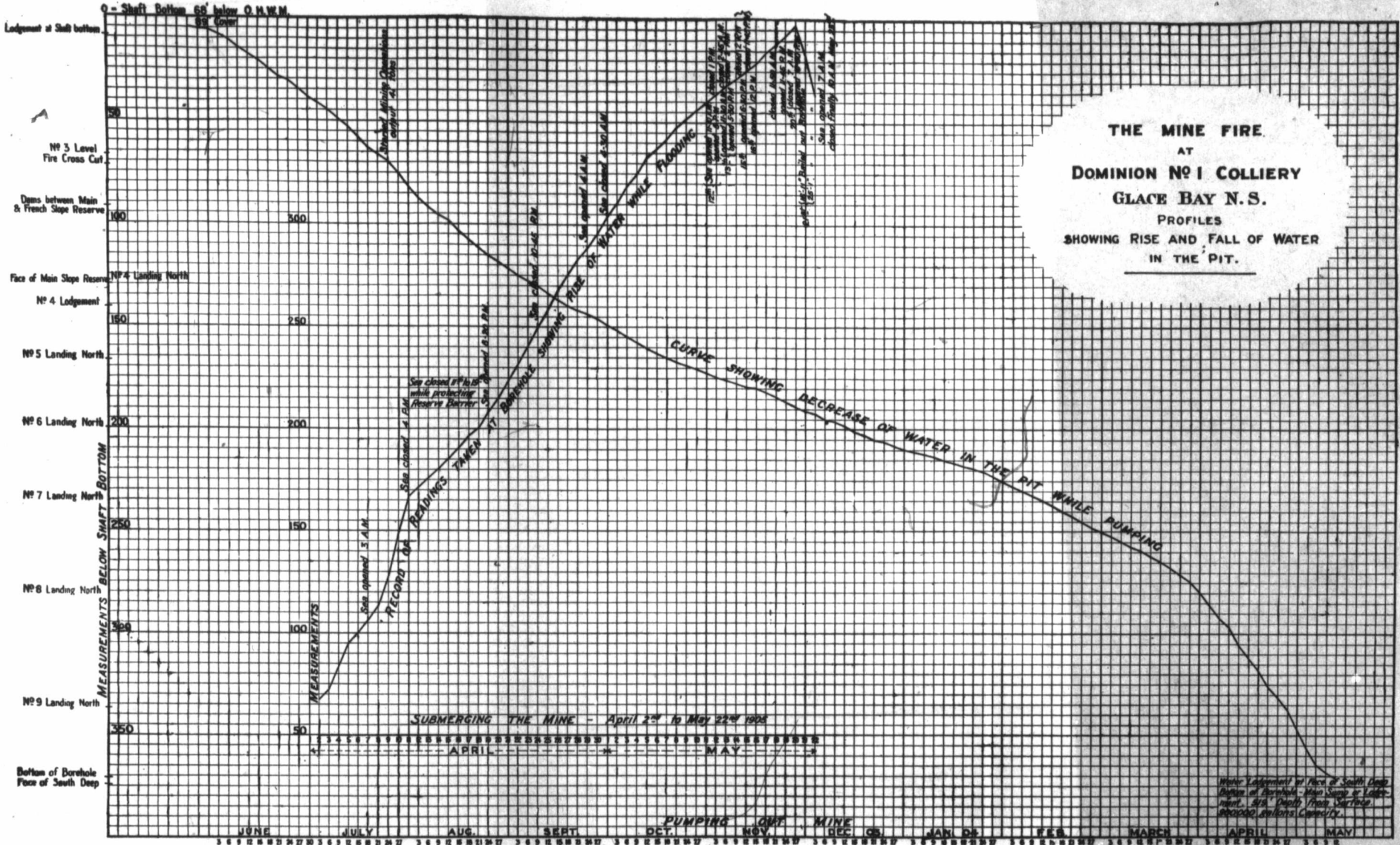
SOUTH DEEP
 A portion of the South Deep was affected by the fire, and the water level in the shaft was raised to the level of the surface of the water in the bay.

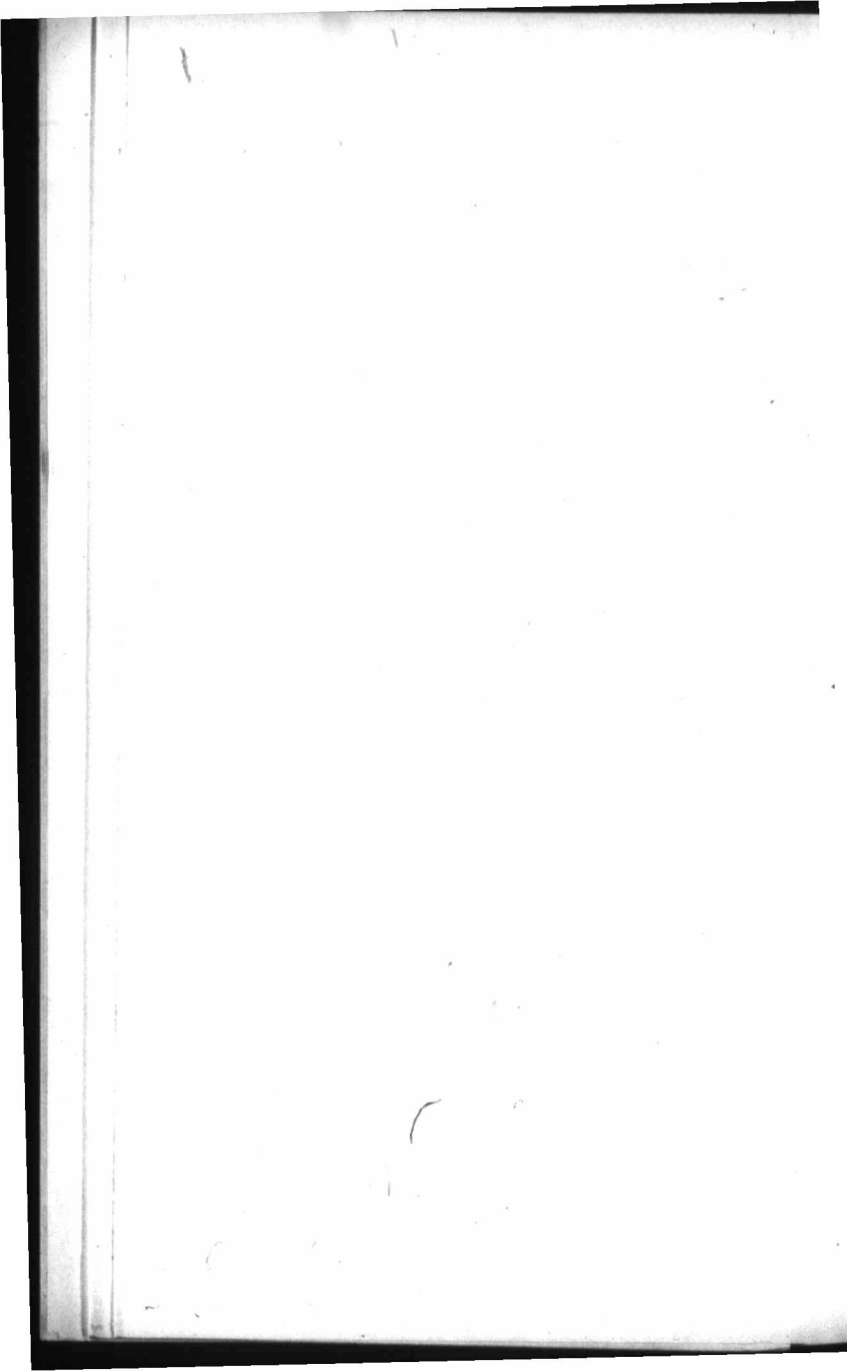
2 - 6" discharge lines to Loggans
 Ventilation
 Ventilation
 Ventilation
 Ventilation

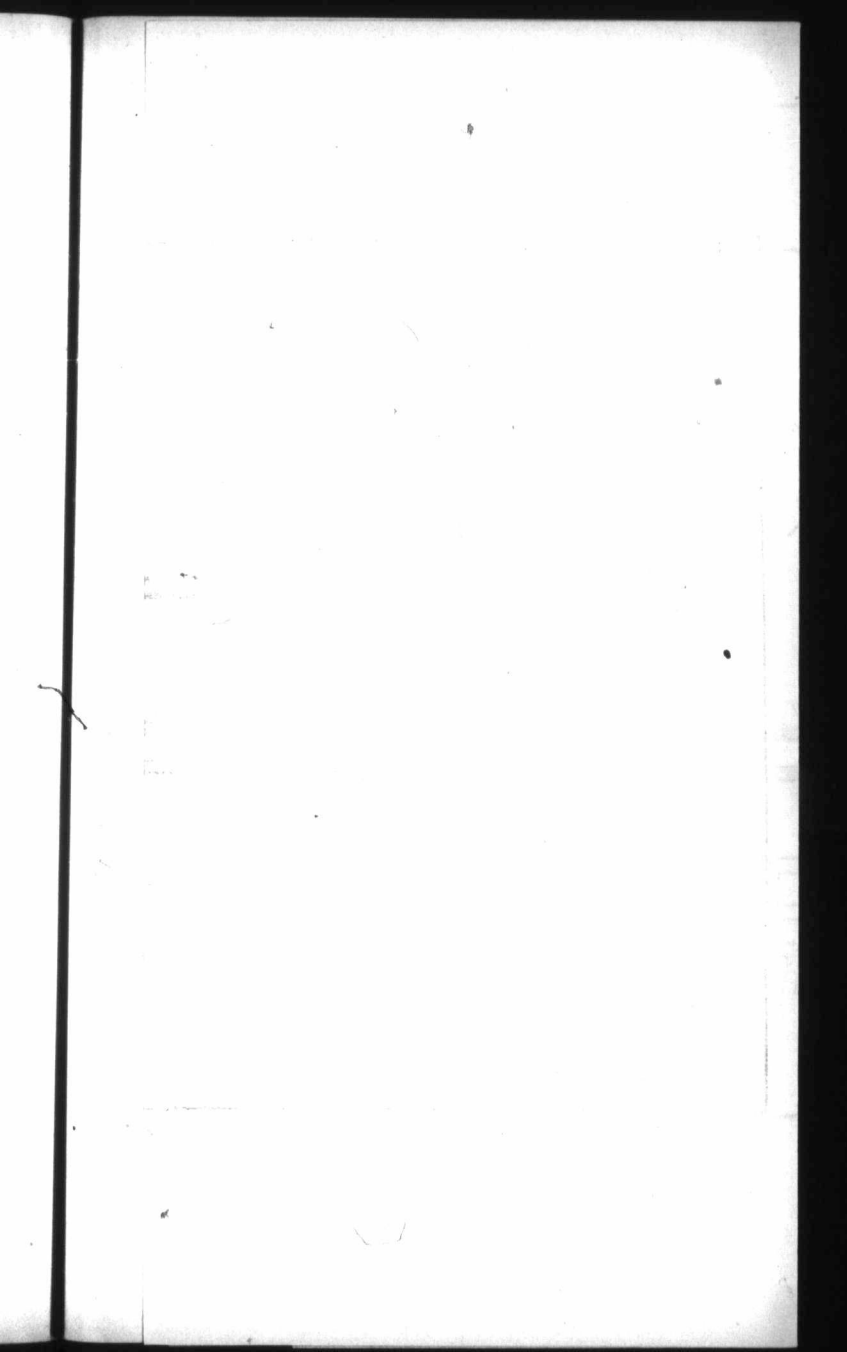




THE MINE FIRE
AT
DOMINION NO 1 COLLIERY
GLACE BAY N.S.
PROFILES
SHOWING RISE AND FALL OF WATER
IN THE PIT.





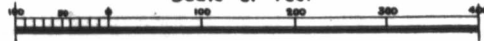


THE MINE FIRE
AT
DOMINION N^o1 COLLIERY
GLACE BAY N.S.
PLAN SHOWING
RESULTS OF FIRE IN DEEPS

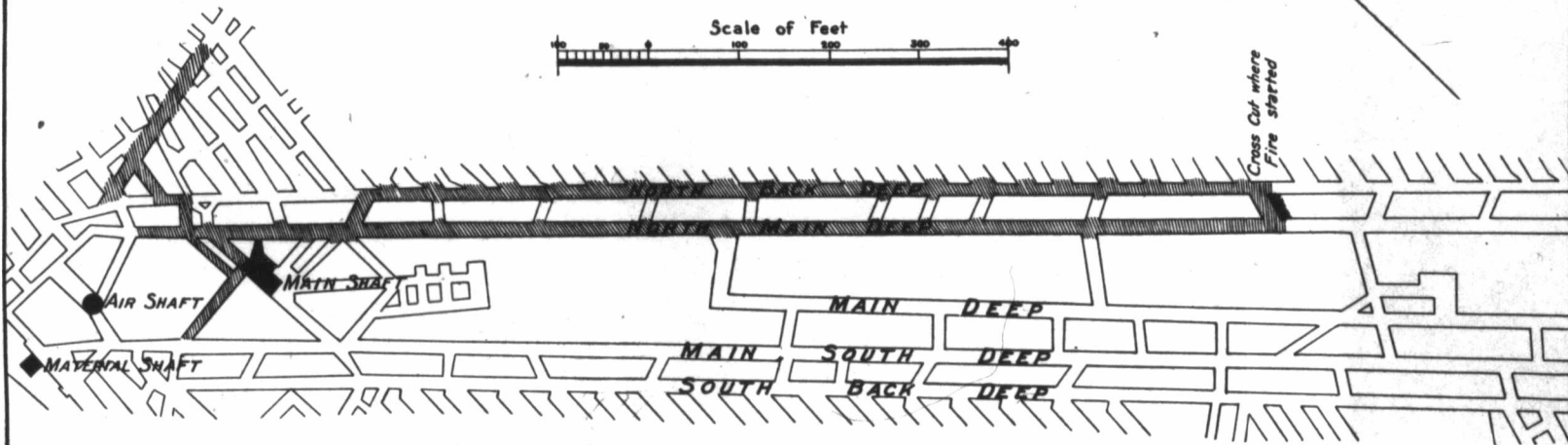
 Caved

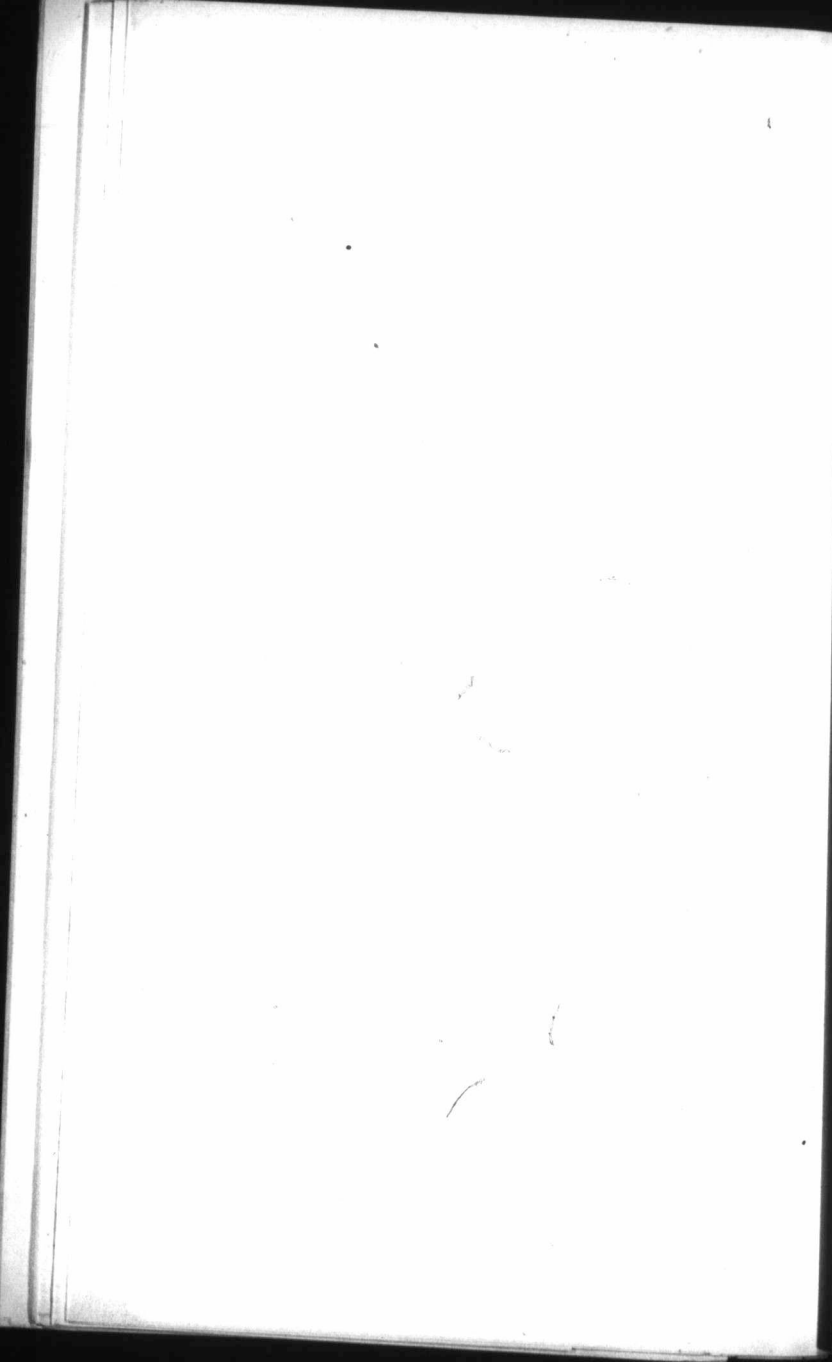
 Roof had to be taken down

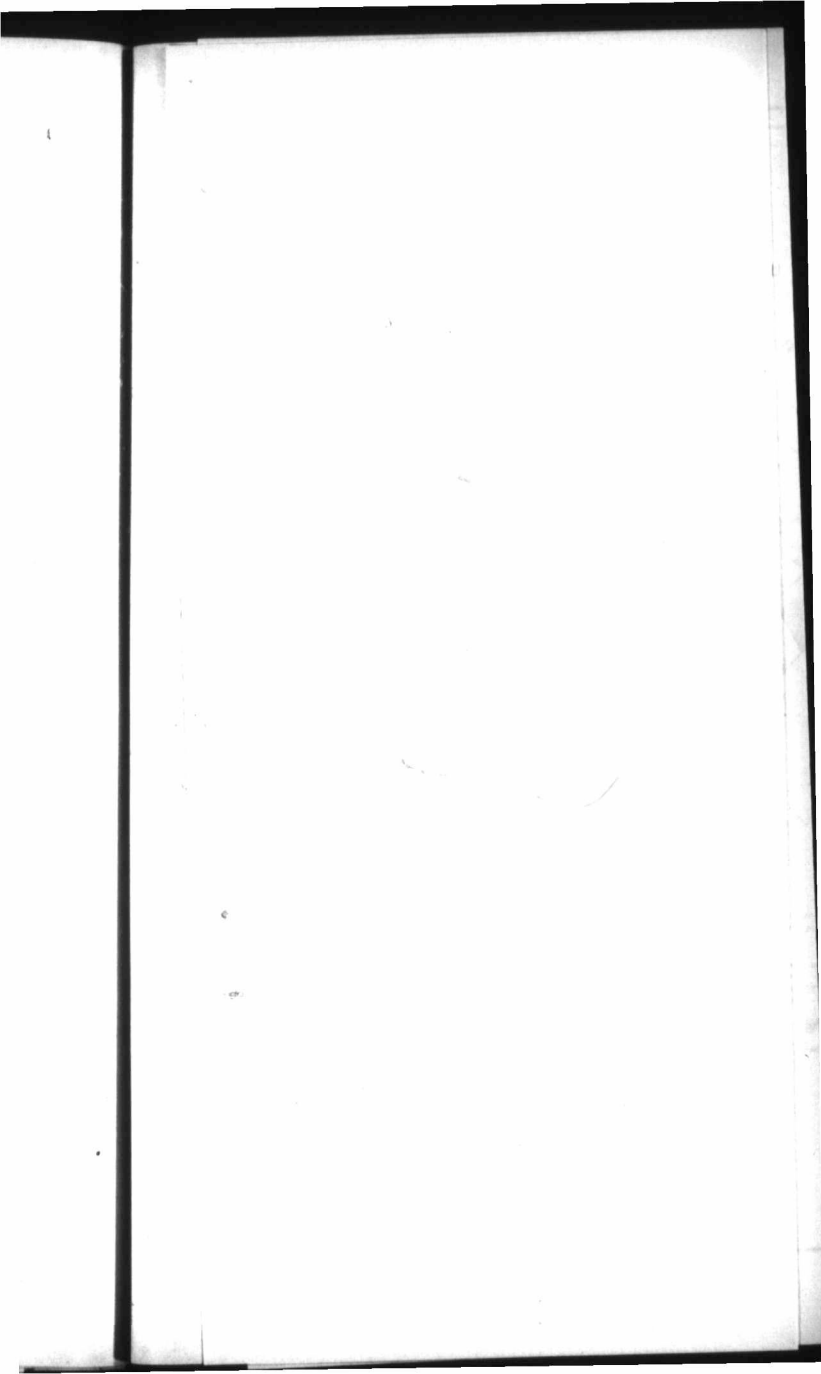
Scale of Feet



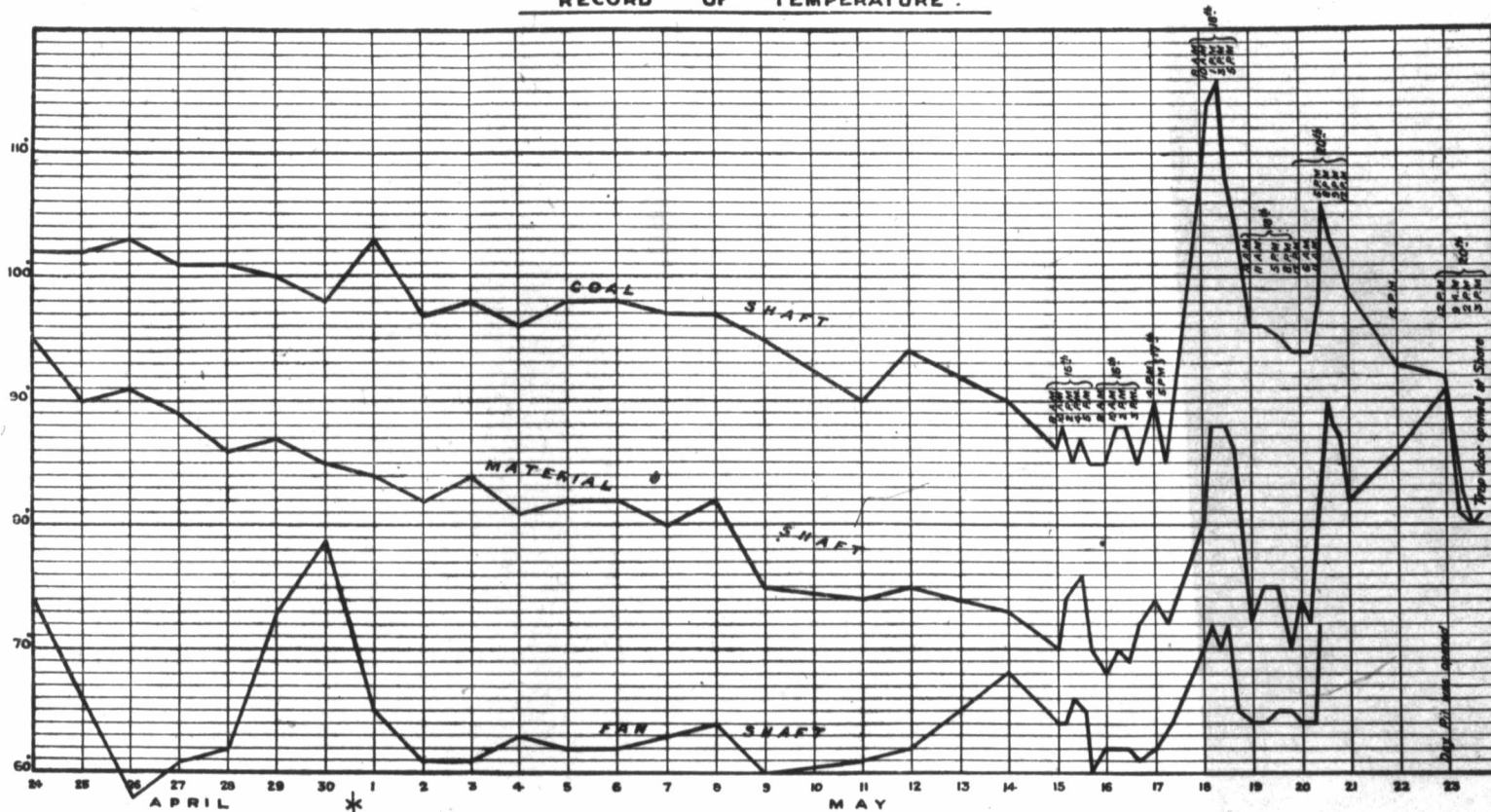
Cross Cut where
Fire started

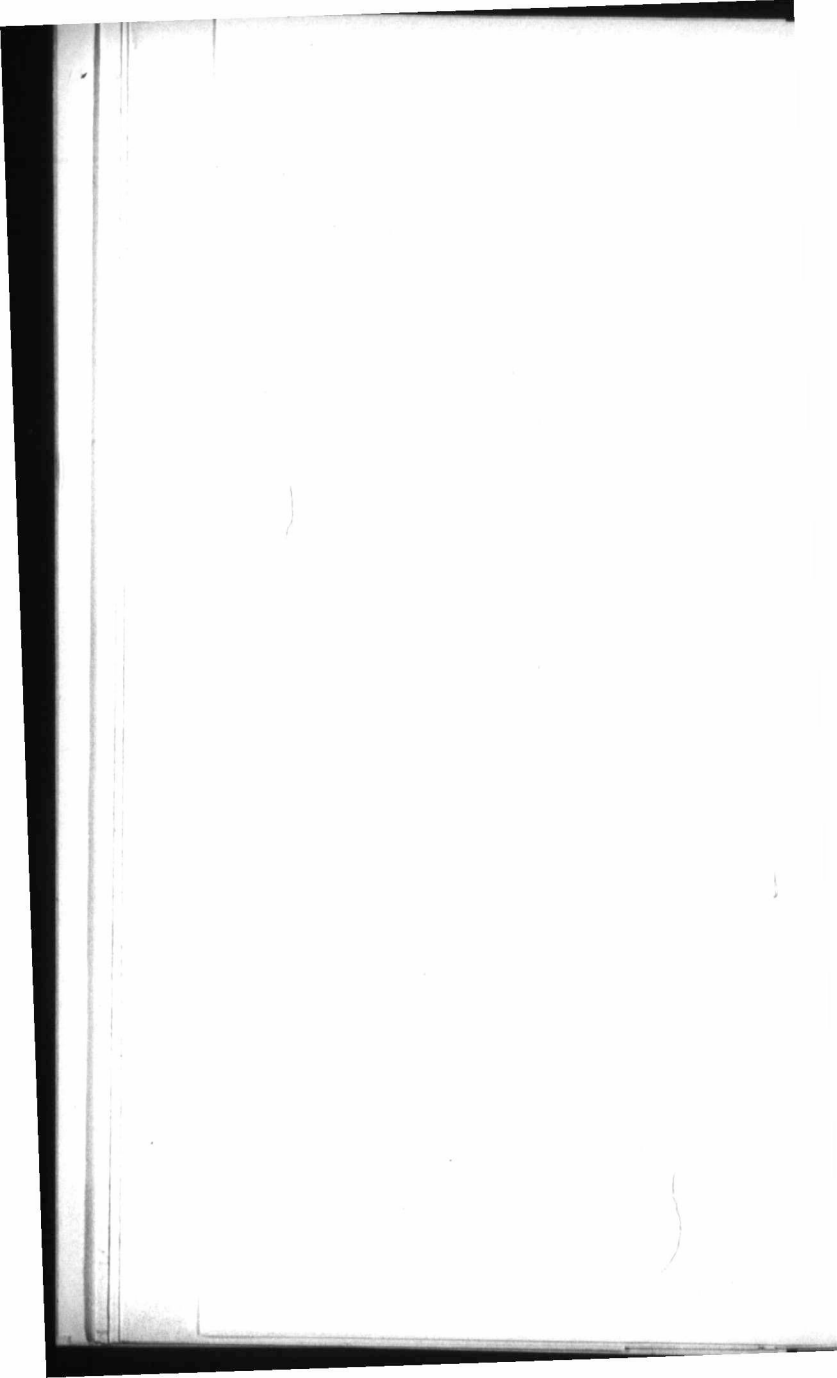


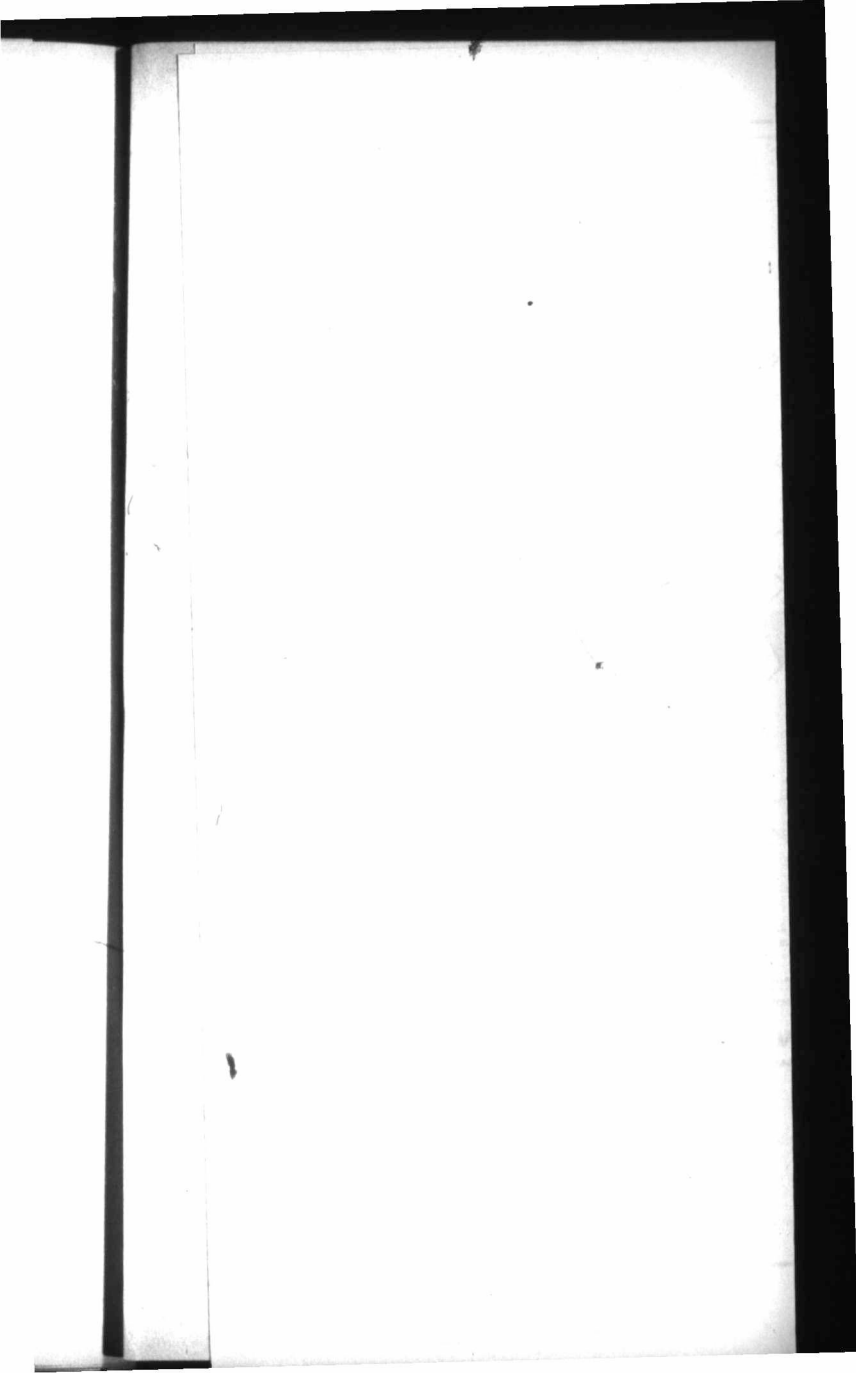




MINE FIRE AT DOMINION NO 1 COLLIERY
 RECORD OF TEMPERATURE.







**THE MINE FIRE AT
DOMINION NO 1 COLLIERY
GLACE BAY N.S.**
PLAN SHOWING APPROXIMATE POSITION OF
SHAFTS, LEVELS, DEEPS AND OF
BARRIERS BETWEEN MINES WORKING ON
PHALEN SEAM

Scale of Feet
