# STORY OF THE DELUGE.

## HEARTRENDING SCENES IN CONEMAUGH VALLEY.

### William Henry Smith's Graphic Description of the Flood's Awful Approach—Mad Plunge of the Aqueous Avalanche on the City of Conemaugh—How Trains, Houses, Everything, Went Down Before the Fierce Niagara—Awful Scenes of Destruction.

Mr. William Henry Smith, General Manager of the Associated Press, was an eye-witness of the awful scenes in Conemaugh Valley on the night of the great calamity. He tells the following story of the flood's devastation:

The fast-line trains that leave Chicago at 3:15 and Cincinnati at 7 p. m. constitute the day express eastward from Pittsburgh, which runs in two sections. This train left Pittsburgh on time Friday morning, but was stopped for an hour at Johnstown by reports of a washout ahead. It had been raining hard for over sixteen hours, and the sides of the mountains were covered with water descending into the valleys. The Conemaugh River, whose bank is followed by the Pennsylvania Railroad for many miles, looked an angry flood nearly bankful. Passengers were interested in seeing hundreds of saw-logs and an enormous amount of driftwood shoot rapidly by, and the train pursued its way eastward. At Johnstown there was a long wait, as before stated. The lower stories of many houses were submerged by the slack water, and the inhabitants were looking out of the second stories. Horses were standing up to their knees in water in the streets; a side-track of the railroad had been washed out; loaded cars were on the bridge to keep it steady, and the huge poles of the Western Union Telegraph Company, carrying fifteen wires, swayed badly, and several soon went down. The two sections ran to Conemaugh, about two miles this side of Johnstown, and lay there about three hours, when they were moved on to the highest ground and placed side by side. The mail train was placed in the rear of the first section, and a freight train was run on to a side track on the bank of the Conemaugh. The report was that a bridge had been washed out, carrying away one track, and that the other track was unsafe. There was a rumor also that the reservoir at South Fork, some time ago a feeder of the Pennsylvania Canal, but latterly the property of a club at Pittsburg, and used for hunting and fishing, was unsafe and might break. This made most of the passengers uneasy, and they kept a pretty good lookout for information. The porters of the Pullman cars remained at their posts and comforted the passengers with the assurance that the Pennsylvania Railroad Company always took care of its patrons. A few gentlemen and some ladies and children quietly seated themselves, apparently contented. One gentleman, who was ill, had his berth made up and retired, although advised not to do so. Soon the cry came that the water in the reservoir had broken down the barrier and was sweeping down the valley. Instantly there was a panic, and a rush for the mountain side. Children were carried and women assisted by a few who kept cool heads. It was a race for life. There was seen the black head of the flood, now the monster of destruction, whose crest was high raised in the air, and with this in view even the weak found wings for their feet. No words can adequately describe the terror that filled every breast, or the awful power manifested by the flood. The round-house had stalls for twenty-three locomotives. There were eighteen or twenty of these standing there at this time. There was an ominous crash, and the round-house and locomotives disappeared. Everything in the main track of the flood was first lifted in the air and then swallowed up by the waters. A hundred houses were swept away in a few minutes; these included the hotel, stores, and saloons on the front street, and residences adjacent.

As the fugitives on the mountain side witnessed the awful devastation, they were moved as never before in their lives. They were powerless to help those seized upon by the waters; the despair of those who had lost everything except life, and the wailing of those whose relatives or friends were missing filled their breasts with unutterable sorrow. The rain continued to fall steadily, but shelter was not thought of. Very few passengers saved anything from the train, so sudden was the cry, "Run for your lives; the reservoir has broken." Many were without hats, and, as their baggage was left on the trains, they were without the means of relieving their unhappy condition. The occupants of the houses still standing on the high ground threw them open to those who had lost all and to the passengers of the train. During the height of the flood the spectators were startled by the sound of two locomotive whistles from the very midst of the waters. The engineers, with characteristic courage, had remained at their posts, and while there was destruction on every hand, and apparently no escape for them, they sounded their whistles. This they repeated at intervals—the last time with triumphant vigor as the waters were receding from the sides of their locomotives. By 5:30 the force of the reservoir waters had been spent on the village of Conemaugh, and the Pullman cars and locomotive of the second section remained unmoved. This was because they were on the highest and hardest ground.

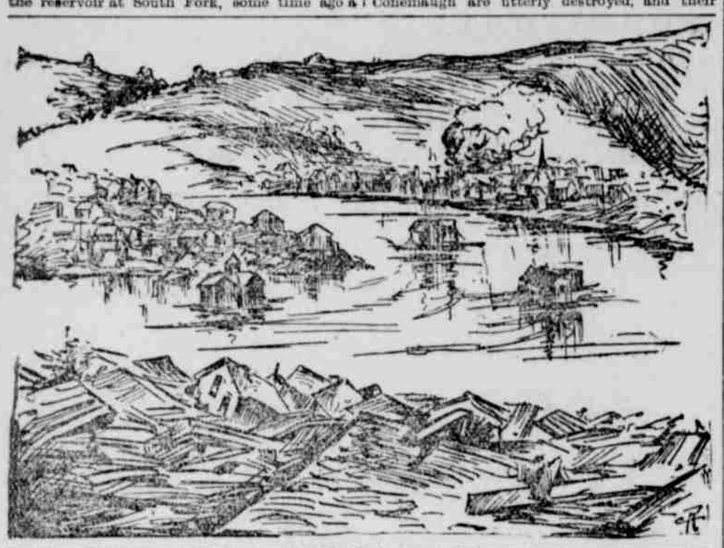
The destructive current of the reservoir flood had passed between that and the mountain, while the current of the river did not cut it away. But the other trains had been destroyed. A solitary locomotive was seen imbedded in the mud where the round-house had stood.

As the greatest danger had passed, the people of Conemaugh gave their thoughts to their neighbors of the city of Johnstown. Here was centered the great steel and iron industries, the pride of Western Pennsylvania, the Cambria Iron Works being known everywhere. Here were churches, daily newspapers, banks, dry goods houses, warehouses, and the comfortable and well-built homes of 12,000 people. What was their fate? In the contemplation of the irresistible force of that awful flood gathering additional momentum as it swept on toward the Gulf, it became clear that the city must be destroyed, and that, unless the inhabitants had telegraphic notice of the breaking of the reservoir they must perish. A cry of horror went up from the hundreds on the mountain-side, and a few instinctively turned their steps toward Johnstown. The city was destroyed. All the mills, furnaces, manufactories; the many and varied industries, the banks, the residences—all.

All were swallowed up before the shadows of night had settled down upon the earth. What of the inhabitants? Who can tell with any certainty? Those who came back by daybreak said that from 5,000 to 8,000 had been drowned. Our hope is that this is an exaggeration, and when the roll is called most will respond. In the light of this calamity the destruction at Conemaugh dwindles into insignificance. In this latter place they were already bringing in the dead on stretchers. How many had been lost here, at Mineral Point, and at South Fork could not be told and may never be known. There were some passengers and perhaps forty or fifty inhabitants. The loss of property is enormous. The track of the railroad company is certainly destroyed for at least ten miles below South Fork, and all other property of the company on the line. The destruction of Johnstown's industries will alone reach many millions. Then to this great sum add the value of the houses and public buildings in that city and of the villages above and below it, and some idea can be formed of the wealth obliterated by the flood created by the breaking of the reservoir.

And this reservoir was maintained for the pleasure of a Pittsburgh club. Upon the mountain was suspended a body of water three miles long, one mile wide, and seventy feet deep for the recreation of a few pleasure-seekers. What would happen if there should be a break must have been imperfectly apprehended, since it is said that a bond of only three millions had been exacted from the club. What are three millions to the gross sum for the destruction of property? Can they restore the dead to life, or assuage the grief of the bereaved? The question of moral responsibility swallows up the financial as completely as the angry waters did the city of Johnstown.

WILLIAM HENRY SMITH.



VIEW OF FLOOD IN JOHNSTOWN—THE OPEN SPACE WAS KNOWN AS IRON STREET.

## THE SCENE SIMPLY AWFUL.

### Pen Pictures of the Heartrending Condition of the Valley.

This is certainly one of the world's greatest catastrophes, telegraphs Fred R. Giles, the Chicago News' special correspondent at Johnstown. The scene is awful. The dead lie so thick that a corpse scarcely commands attention, save as the committees proceed on their rounds. In a schoolhouse on the hillside there are 150 bodies. Many of them are frightfully cut and bruised. Every condition of life and both sexes in almost equal number are among the dead. The people were caught without warning in the midst of their regular pursuits. Merchants, lawyers, and business men generally are the most numerous victims. The great number of young women, who can be seen to have had attractive faces despite the distortions of death, is deeply touching. Ladies are soon identified and dressed for burial. Thousands of coffins are coming in on the trains and are being rapidly used. In many cases whole families perished. In a small room of the school-house lay eleven little children. A big boy sat by contemplating them. They were his brothers and sisters. His father, Squire Fisher, and his mother were drowned, but their bodies have not yet been found. The children were in the attic and would have been saved, but a locomotive was hurled through the house and knocked down.

The business part of Johnstown is without form. The stores in such buildings as still stand are in vast disorder. The doors are blocked with drift; but peering within a number of them, the proprietors, their clerks, and customers can be seen dead on the floor. The Hotel Hurlburt, a large brick building, was made a place of refuge, and fell, killing seventy people.

The whole valley, as far as the eye reaches, is an indescribable wreck, and upon this hideous scene a cold rain has poured all day long and still prevails to-night. No attempt is made to avoid the weather and the thousands of survivors are wringing wet to-night. Most of the fugitives have got shelter now.

The first dispatches from this scene were many times short of the tremendous truth. The catastrophe is so great that none dare venture an estimate upon its extent. Woodvale and Conemaugh are utterly destroyed, and their joint population of 5,000 is dead. Johnstown is wrecked, and certainly 5,000 people lie dead in the streets and among the driftwood in the subsiding stream. The business portion of the prosperous little city is obliterated, and for a mile along Main street the wreckage is piled fifty feet high.

For miles below the debris of shattered houses chokes the stream. One hundred and ninety bodies were picked out of the river at Nineveh, and the majority were buried there to-day.

The depot is filled with dead, and all the public buildings left standing are used as morgues. In Johnstown proper the work of picking up the dead has barely begun.

There are about two square miles of wreckage gorged against the bridge and in flames. It is said that 2,000 people died there. This vast drift is still ablaze, and is so tightly packed that it will require great engineering to clear the stream. The river is parted by it, and runs like a mill-race on either hand.

The lower part of the town along the river bank is washed as bare as a common, and it is hard to believe that thousands of dwellings and business blocks so recently covered the ground.

## DAZED BY THE HORROR.

### Johnstown Like a Great Tomb—Scenes in the Stricken City.

A sad and gloomy sky, almost as sad and gloomy as the human faces under it, shrouded Johnstown to-day, continues Mr. Giles. Rain fell all day and added to the miseries of the wretched people. The great plain where the best part of Johnstown used to stand is half covered with water. The few sidewalks in the part that escaped the flood were inches thick with black sticky mud, through which tramped a steady procession of the poor women who are left utterly destitute. The tents, where the people are housed who cannot find other shelter, were cold and cheerless. The town seemed like a great tomb. The people of Johnstown have supped so full of horrors that they go about in a sort of a daze and only half conscious of their griefs. Every hour as one goes through the streets he hears neighbors greeting each other and then inquiring, without show of feeling, how many each had lost in his family. To-day a gray-haired man hailed another across the street with this question.

"I lost five; all are gone but Mary and I," was the reply.

"I am worse off than that," said the first old gentleman; "I have only my grandson left. Seven of us gone."

And so they passed on without apparent excitement. They and every one else had heard so much of these melancholy conversations that somehow the calamity had lost its significance to them. They treat it exactly as if the dead persons had gone away and were coming back in a week.

The melancholy task of searching the ruins for more bodies went on today in the soaking rain. There were little crowds of morbid curiosity hunters around each knot of workingmen, but they were not residents of Johnstown. All their curiosity in that direction was sated long ago. Even those who come in from neighboring towns with the idea of a day's strange and ghastly experiences did not care to be near after they had seen one body exhumed. There were hundreds and thousands of these visitors from the country.

One thing that makes the work of searching for the bodies very slow is the strange way that great masses of objects were rolled into intricate masses of rubbish. As the flood came down the valley of the South Fork it obliterated the suburb of Woodvale, where not a house was left nor a trace of one. The material they had contained rolled on down the valley, over and over, grinding it up to pulp and finally leaving it against an unusually firm foundation or an eddy. These masses contain human bodies, but it is slow work to pick them to pieces.

In the side of one of them was seen the remnants of a carriage, the body of a harnessed horse, a baby cradle and a doll, a tress of woman's hair, a rocking-horse, and a piece of beefsteak still hanging to a hook.

## SMALL TOWNS SWEPT AWAY.

### Little Left of Kernville—Woodvale a Sea of Mud.

Out of the 1,000 houses that once made up the little town of Kernville only 155 remain standing, says a Johnstown special. One thousand people is a low estimate of the number of lives lost from this town. But a few of the bodies have been recovered. It is directly above the ruins at the bridge, and the bodies have floated down into them, where they burned. A walk through the town revealed a desolate sight. Only about twenty-five able-bodied men have survived and are able to render any assistance. Men and women can be seen with black eyes, bruised faces, and cut heads. The appearance of some of the ladies is heartrending. They were injured in the flood and since that have not slept. Their faces have turned a sickly yellow, and dark rings surround the eyes. Many have succumbed to nervous prostration. For two days but little assistance could be rendered them. No medical attention reached them. The wounded remained uncared for in some houses cut off by the water and died from their injuries alone. Some were alive on Sunday, and their shouts could be heard by the people on the shore.

A man is now in a temporary jail in what is left of the town. He was caught stealing a gold watch. A shot was fired at him, but he was not wounded. The only thing that saved him from lynching was the smallness of the crowd. His sentence will be the heaviest that can be given him. A milkman who was overcharging for milk this morning narrowly escaped lynching. The infuriated men appropriated all his milk and distributed it among the poor and then drove him out of the town.

Services in the chapel from which the bodies were buried consisted merely of a prayer by one of the survivors. No minister was present. Each coffin had a descriptive card upon it and on the grave a similar card was placed so that bodies can be removed later by friends.

Where Woodvale once stood there is now a sea of mud, broken but rarely by a pile of wreckage. Nothing is standing but the old woolen mills. The place is swept bare of all other buildings but the ruins of the Gautier wire-mill. The boilers of this great works were carried 100 yards from their foundation. Pieces of engines, rolls, and other machinery were swept far away from where they once stood. The wreck of a hose carriage is sticking up out of the mud. It belonged to the crack company of Johnstown. The engine house is swept away and the cellar is filled with mud, so that the site is obliterated.

A German watchman was on guard at the mill when the waters came. He ran for the hillside and succeeded in escaping. He tells a graphic story of the appearance of the water as it swept down the valley. He declares that the first wave was as high as the third story of a house.

The place is deserted. No effort is being made to clean off the streets. The mire has formed the grave for many a poor victim. Arms and legs are protruding from the mud, and it makes the most sickening of pictures.

The Cambria Hospital has now 200 patients. Several injured people have had operations performed on them.

The hospital in the upper part of Johnstown is full to overflowing. Many have been carried to the surrounding houses.

Hospitals have been established at Conemaugh and Mineral Point.

A rope ferry is now being operated in the lower part of the town. An effort is being made to construct a bridge across the Conemaugh at the point where the old county bridge stood.

Order is slowly arising out of chaos. The survivors are slowly realizing what is the best course to pursue. The great cry is for men—men who will work and not stand idly by and do nothing but gaze at the ruins.

A man named Dougherty tells a thrilling story of a ride down the river on a log. When the waters struck the roof of the house on which he had taken shelter, he jumped astride a telegraph pole, riding a distance of some twenty-three miles from Johnstown to Bolivar before he was rescued.

A nameless Paul Revere lies somewhere among the dead. Who he is may never be known, but his ride will be famous in local history. Mounted on a large bay horse, he came riding, like an angel of wrath, down the pike which passed through Conemaugh to Johnstown, shouting as he came: "Run for your lives to the hills! Run to the hills!" The people crowded out of their houses along the thickly settled streets. Nobody knew the man, and some thought that he was a maniac. On he rode, shrilling out his awful cry. In a few moments there came a cloud of ruin down the broad streets, down the narrow alleys, grinding, twisting, hurling, overturning, crushing, annihilating the weak and strong. It was the charge of the flood. On raced the rider and on rushed the wave. Dozens of people heeded the warning and ran for the hills. Just as the lone rider crossed the railroad bridge the mighty wave fell upon him, and horse, man, and bridge went down into chaos together.

## THE FATAL DAM.

### Its Owners Were Aware of Its Rotten Condition.

Messrs. H. Singer, George Singer, Louis Clark, and R. Hussey Binns, of Pittsburg, relatives of members of the South Fork Fishing Club, have arrived from the broken dam, says a dispatch from Johnstown.

The lake is completely dried out. The dam broke in the center at 3 o'clock on Friday afternoon, and at 4 o'clock it was dry. That great body of water passed out in one hour. Messrs. Park and Van Buren, who are building a new draining system at the lake, tried to avert the disaster by digging a sluice-way on one side to ease the pressure on the dam. They had about forty men at work, and did all they could without avail. The water passed over the dam about a foot above its top, beginning at about 2:30. Whatever happened in the way of a cloudburst took place during the night. There had been but little rain up to dark. When the workmen awoke in the morning the lake was very full and was rising at the rate of a foot an hour. It kept on rising until 2 o'clock, when it first began breaking over the dam, undermining it. Men were sent three or four times during the day to warn the people below of their danger. When the final break came at 3 o'clock there was a sound like thunder, and trees, rocks, and earth were shot up into mid-air in great columns, and then the wave started down the ravine. A farmer who escaped said that the water did not come down like a wave, but jumped on his house and beat it to fragments in an instant. He was safe upon the hillside, but his wife and two children were killed. At the present time the lake looks like a cross between the crater of a volcano and a huge mud-puddle with stumps of trees and rocks scattered over it. There is a small stream of muddy water running through the center of the lake. The dam was seventy feet high, and the break is about 200 feet wide, and there is but a small portion of the dam left on either side. No damage was done to any of the buildings belonging to the club. The whole south fork is swept, with not a tree standing.

A man named Maguire says he was standing on the edge of the lake when the walls burst. The water was rising all day and was on a level with a pile of dirt which, he said, was above the wall of the dam. All of a sudden it burst with a report like a cannon and the water started down the mountain side, sweeping before it trees as if they were chips; bowlders were rolled down as if they were marbles. The roar was deafening. The lake was emptied in an hour and a half. All the water, he said, is now out. The railroad is in a terrible condition. At some points holes twenty to thirty feet deep were washed in the tracks. On his way down he stopped at Mineral Point, where sixteen houses were washed away and several lives lost. At East Conemaugh thirty houses were carried away by the flood. The loss of life is large at this point.

THE CAMBRIA IRON WORKS.

## THE LOSS OF LIFE.

### The Terrible Sacrifice of Human Life Will Never Be Known.

The developments of every hour make it more and more apparent that the exact number of lives lost in the Johnstown horror will never be known, says one correspondent. All estimates that have been made up to this time are conservative and when all is known will doubtless be found to have been too small. Over one thousand bodies have been found since sunrise to-day, and the most skeptical concede that the remains of thousands more rest beneath the debris above Johnstown bridge. The population of Johnstown, the surrounding towns, and the portion of the valley affected by the flood is, or was, from fifty thousand to fifty-five thousand. Associated Press representatives to-day interviewed numerous leading citizens of Johnstown who survived the floods and the consensus of opinion was that fully 30 per cent. of the residents of Johnstown and Cambria had been victims of the combined disasters of fire and water. If this be true the total loss of life in the entire valley may reach 15,000. Of the thousands who were devoured by the flames, and whose ashes rest beneath the smoking debris above Johnstown bridge, no definite information can ever be obtained. As little will be learned of the hundreds who sank beneath the current and were borne swiftly down the Conemaugh only to be deposited hundreds of miles below on the banks and in the driftwood of the raging Ohio. Probably one-third of the dead will never be recovered, and it will take a list of the missing weeks hence to enable even a close estimate to be made of the number of lives that were snuffed out in that brief hour. That this estimate can never be accurate is understood when it is remembered that in many instances whole families and their relatives were swept away and found a common grave beneath the wild waste of waters. The total destruction of the city leaves no data to even demonstrate that the names of these unfortunates ever found place on the pages of history.

"All indications point to the fact that the death-list will reach over five thousand names, and in my opinion the missing will reach 8,000 in number," declared Gen. D. H. Hastings.

At present there are said to be 2,200 recovered bodies. The great difficulty experienced in getting a correct list is the great number of morgues. There is no central bureau of information, and to communicate with the different deadhouses is the work of hours.

In answer to questions from Gov. Beaver, Adjt. Gen. Hastings has telegraphed the following:

"Good order prevailed throughout the city and vicinity last night. Police arrangements are excellent. Not one arrest made. No need of sending troops.

"About 2,000 bodies have been rescued, and the work of embalming and burying the dead is going on with regularity. There is plenty of medical assistance. We have a bountiful supply of food and clothing to-day and the fullest telegraphic facilities are afforded, and all inquiries are promptly answered. The Pennsylvania railroad will be completed to Johnstown station to-night. Have you any instructions or inquiries?

"The most conservative estimates here place the loss of lives at fully 5,000. The prevailing impression is that the loss will reach from 8,000 to 10,000. There are many widows and orphans, and a great many wounded—impossible to give an estimate. The property destroyed will reach $25,000,000. The popular estimate will reach $40,000,000 to $50,000,000. Chief Burgess Hurl and L. C. Moxham, Chairman of the Relief Committee, are doing good work. Have made requisition on Pittsburg for cooking facilities, shoes, and made-up clothing for men, women, and children, all of which we need badly. To-morrow morning we will have 600 men, with horses, carts, axes, and other tools, clearing away the debris.

"You cannot raise too much money for this suffering community."

## GOV. BEAVER'S CALL FOR AID.

### Money, Provisions, and Clothing Badly Needed.

Gov. Beaver, of Pennsylvania, issued a strong appeal for aid. It is addressed to the people of the United States, and says:

Newspaper reports as to the loss of life and property have not been exaggerated. The Valley of the Conemaugh, which is peculiar, has been swept from one end to the other as with the besom of destruction. It contained a population of 40,000 to 50,000 people, living for the most part along the banks of a small river confined within narrow limits. The most conservative estimates place the loss of life at 5,000 human beings and of property at $25,000,000.

The most pressing needs so far as food is concerned have been supplied. Shoes and clothing of all sorts for men, women and children are greatly needed. Money is also urgently required to remove the debris, bury the dead, and care temporarily for widows and orphans and for the homeless families. Other localities have suffered to some extent in the same way, but not in the same degree. Late advices would seem to indicate that there is great loss of life and destruction of property along the west branch of the Susquehanna and in localities from which we can get no definite information.

A CORNER OF THE CAMBRIA IRON COMPANY'S MILL NEXT TO THE BRIDGE.

The responses from within and without the State have been most generous and cheering. North and South, East and West, from the United States and from England there comes the same hearty, generous response of sympathy and help.

Funds contributed in aid of the sufferers can be deposited with Drexel & Co., Philadelphia; Jacob E. Bamberger, banker, Harrisburg; or William R. Thompson & Co., bankers, Pittsburg. All money contributed will be used carefully and judiciously.

## TWO CHICAGOANS' EXPERIENCE.

### How They Escaped the Rushing Wall of Water.

Frank Felt and Sidney McCloud, two Chicago merchants, were in Johnstown when the avalanche of water fell upon the ill-fated city.

Both gentlemen give it as their estimate that the lost will number between 10,000 and 15,000. They say that on the night of Decoration Day they saw 20,000 people in the streets, and the town was alive with people. Friday morning the streets were crowded with people rushing for the mountain when they started, and not more than 500 reached the place. All others went down with the flood. Messrs. McCloud and Felt tell a graphic story of their escape. They were out attending to business during the morning, and when they went to the hotel, the Hurlbut House, at noon there was about ten inches of water in the office, and they went to a restaurant to get something to eat. When they came out of the restaurant they saw the streets crowded with people running to the mountains. They stepped out the back way to an alley and ran for the hill, but had to wade through water up to their waists before reaching the high ground. They had little more than a block to go, and the people who were twenty feet behind them were caught by the flood and swept away. For this reason they think the loss will be found to be very great. The water came in a wall, preceded by a yellowish cloud of mist or foam, and as it caught the blocks of houses it swept them down together with a succession of crashes that was terrible.

Mr. Felt thinks there were less than 600 people on the high ground with him. The others went down with the flood. He saw hundreds of them go down before his eyes as they stood looking down upon the wreck. No one escaped from the Hurlbut house, and Messrs. Felt and McCloud would have been among the lost had they dined there.

As soon as possible the Chicago men began the work of organizing relief parties to rescue the people who were on the houses that had been swept back into Stony Creek when the water could not escape below. These people were wild with fright, and Mr. Felt secured a clothes-line which was used to send out a raft with a strong man to take people off the houses. A river man volunteered for this work, and with a rope tied securely about his body, he made many trips into the flood, and each time brought two people ashore with him. The other gentlemen carried these people up to the high ground where they were cared for by the residents of that locality. They rescued over fifty people in this way, mostly women and children. They worked as long as they could see and after dark the fire at the bridge gave them light to see here and there the people still clinging to roofs, some of whom were rescued. A number of traveling men who were in the hotels tied tags to their clothing and shot themselves, so desperate were they in this scene of terror. Both gentlemen vouch for this.

NOTHING seems much clearer than the natural direction of charity. Would we all but relieve, according to the measure of our means, those objects immediately within the range of our personal knowledge, how much of the worst evil of poverty might be alleviated.

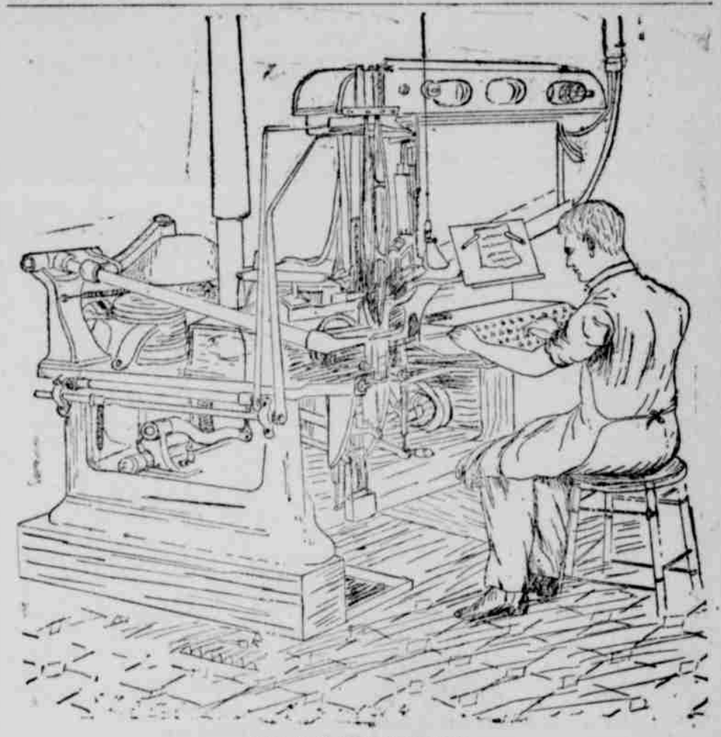
# THE LINOTYPE MACHINE

## IT WILL ACCOMPLISH THE WORK OF THREE PRINTERS.

### An Illustrated Description of the Most Remarkable Type-setting Machine Yet Invented—It Is Now Used by the New York Tribune.

OVER 160 patents relative to type-setting and type-distributing machines have been issued from the Patent Office at Washington. All such devices have thus far, however, met with but little favor among printers, and they have not been employed in practical work to a sufficient extent to have any appreciable effect in this most important branch of the printing business. Printing presses have been improved almost beyond comparison with those of the earlier days of the craft—when only about 200 impressions were obtainable per hour from small forms, as against more than 20,000 copies now made per hour of our largest newspapers, but the type-setting part of the making of books and newspapers has remained substantially where it was left by the earliest users of movable types.

The accompanying illustrations from the *Scientific American*, representing the latest, and in many respects the most remarkable, of the numerous machines which inventors and mechanics have devised in their long-continued efforts to find some practical means by which to supersede or cut short the tedious work of typesetting. It is known as the Linotype machine, from the nature of its product.



THE LINOTYPE MACHINE.

It is not, strictly speaking, a typesetting machine, but forms type bars, each of the length, width and heights of a line of type, and the exact counterpart of that which a compositor would set up, except that each line is formed of one entire piece of metal, instead of as many different pieces as there are characters, spaces, etc. The key-board in front of which the operator sits has 107 keys, each marked for a capital or lower case character of a font of type, or the figures, points, or compound letters used in connection therewith, many of the letters most frequently used having several keys. The operative parts are carried by a rigid metal frame, all portions of which are stationary. The "copy" is placed upon a convenient holder just above the keyboard, and above and behind the copyholder is a series of vertical tubes, one to correspond with each key, forming the magazine in which the matrices representing type are held. The keys are pivoted in a supporting frame carried by a bar attached to the magazine tubes, and each has a vertical slot or opening for the passage of the matrix, which drops by gravity as the key is depressed, another type at the same time descending from the magazine tube to take the place of the one discharged, and bearing upon the upper edge of the key. The slotted oscillating key thus serves as an escapement, receiving the matrices one at a time from the tube, and delivering them through the corresponding openings beneath, the delivery being instantaneous as the operator touches each key.

The matrices, of which one is shown herewith, each consist of a thin plate of brass an inch and a quarter long, about three-fourths of an inch wide, and of a thickness minutely defined by that of the letter produced on each, all matrices bearing the same letter being exact duplicates of each other. Each matrix has suspending shoulders differing on the matrices representing the respective characters, and secondary shoulders or notches differing in width on the different matrices, the special distinctions being necessary to insure the automatic distribution of the matrices to the magazine tubes after they have been used. A side view of one of the matrices is also shown at A, in the sectional figure, where it forms part of a line as held up in casting.

THE MATRIX.

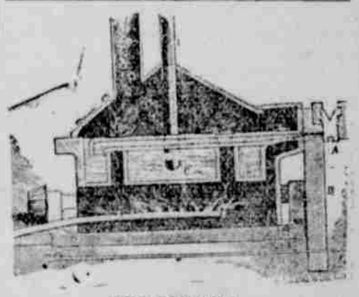
To receive the matrices, as they are delivered one at a time below the magazine, and conduct them to the point at which they are assembled or composed to form lines, a horizontal guide or channel is provided, with rails on which the shoulders of the matrices are supported, the matrices fitting loosely in such channel, and being maintained therein in substantially upright position. The matrices are advanced through this guide or channel to the point of assembling by means of a blast of air directed longitudinally through the channel, from the lowermost of the two tubes seen to be connected with the machine at the right of the operator, the other tube being connected with the casting mechanism, to assist in cooling the mold. By this means the delivery of each matrix is effected so promptly that its motion can hardly be seen, the click of the matrix coming to its place in the line being formed seeming to be almost simultaneous with the touching of each key, little fingers or followers at the same time continually pushing forward the characters until the line is completed, or nearly so.

The spacing of the lines is accomplished by a peculiar mechanism which does it automatically, and always spaces evenly between every word.

The line of matrices thus completed is received by a head opposite the end of the stationary type guide, there being immediately below and behind the head a mold, in the form of a vertical disk, having a mold chamber or slot extended horizontally through it of a form and size identical with that of the required type bar. This portion of the machine will be better understood by reference to the sectional view, where B represents the disk mold, H the line of matrices as held up thereto, C the reservoir of melted metal in its gas-heated chamber, D a plunger acting as a force pump to pump or force the metal into the mold, and E an ejector bar which has forced out the type bar F. For the purpose of forcing the line of matrices tightly against the mold, their characters registering with the mold proper, an outside clamping head is employed to bear against the outer edge of the line, while supplemental clamps or jaws assist to hold the line firmly and in exact adjustment.

Not only is all this work done automatically, but the matrices, after the type bar has been formed, are automatically withdrawn from their position against the mold disk and lifted by a carrier to the distributing mechanism, at the top of the magazine, whence they are distributed to their several tubes.

How far this machine may be considered a practical success for general use, in the way of superseding typesetting by hand in the old way, it is perhaps too early to give a definite answer. It is obvious that it is not adapted for work requiring different varieties of type, as small capitals, italics, accented letters, etc. But there is a large class of work, especially that required for newspapers in general, in regard to which this objection would not be very material. The actual performance of the machine at present, and for many months past on such plain work, is about equal to three ordinary compositors, and it requires but a short time for an operator to attain an efficiency which will enable him steadily to maintain this speed, as compared with hand work. This, at least, has been the experience on the New York *Tribune*, where only thirty machines are ordinarily kept running for a day's work of eight hours each to get out a ten-page edition of the daily, which would require the services of about ninety men in the old way of working. The absolute saving of all distribution, which is equivalent to about one-quarter of the work of composition, is of itself a most important factor in the economy of the machine, while "standing matter," in the form of these type bars, can be kept for an unlimited time, and in any amount, without inconveniencing the office. To correct an error a new line has to be made, but this is done so quickly that the entire work of correcting is said not to be increased.



THE FURNACE.

### A Remarkable Story.

While the 5-year-old son of John Y. W. Purcell was "playing boat" in a mud pond or flag marsh on the "Island," as I called a strip of wet, wooded land on the Thomas H. Tremper tract in the town of Rochester, he was attacked by a large number of snapping turtles, very numerous in that section, and sustained several severe bites from the hitherto considered inoffensive reptiles. No cause is known for the attack and in that section it is entirely unprecedented.

It seems the first warning the little fellow had was a general gathering of the turtles around him, each uttering a peculiar croaking noise. The little tot, being questioned about it by the attending physician, said: "Zay all tommenced to hollar an' I frew 'tones at 'em. "Zen I yunned an' falled an' zey all bite my legs zan foots an' hurt me orful bad." His mother hearing his screams rushed to his assistance only to find him completely surrounded by the ugly things, which were literrlly chewing him to pieces and sucking his blood and it was with some difficulty that she beat them off with a clothes stick which she happened to be holding in her hand.—*Poughkeepsie News-Press.*

THE largest ruby in the world is said to be a stone weighing twenty-four carats and measuring an inch in length and three-quarters of an inch in width. It is owned in London.