

GREAT WORKS AND THEIR COST IN HUMAN LIVES

Spanning Wide Rivers, Erecting Skyscrapers, Boring Tunnels and Subways, Not Done Without Many Fatalities.

Tales of Heroism Relieve Recital of Appalling Disasters—Hairbreadth Escapes and Startling Adventures Form Part of the Building Up of the Great City of the Future—"Immunes" Sought All Over Earth.

New York.—Not millions of dollars alone, nor the skill of designers, nor the cunning of craftsmen enter into the making of a great city. Skyscrapers, bridges, tunnels and subways must be purchased at a heavy cost of human life. Few realize how many men die that a great public work may be created. Engineers and builders say that the sacrifice is inevitable. Six tunnel systems are being constructed under the North and East rivers. According to one estimate, there is one man killed in them, on an average, for every day of the year. A well-known engineer has estimated that every floor of a modern building of pretentious size has cost a life, either in the forests where the timber has been cut, in the coal and iron mines, and stone quarries, the steel mills, the caissons sunk deep in the earth for the foundations, or in the steel superstructures that rise like to the sky.

Hairbreadth Escapes.

Yet the spirit of adventure walks hand in hand with death. While many lives were lost that the Brooklyn and Williamsburg bridges might be built, there were escapes by the workmen engaged on them that would seem grotesque and improbable if put into a novel. A man may die for every day of the year during the construction of a caisson or river tunnel, but the men who escape tell stories that would enhance the fame of Hugo, Poe, or Eugene Sue. The sacrifice of life in public works, too, is a story apart from the record of seven lives ended by violence in this city for every day in the year. It takes no count of the men, women and children killed by accidents in the streets—one victim for every sunset.

A hint of the sacrifice of life in public works was found in the records of the board of coroners in Manhattan. Last year there were 2,160 deaths by violence in the boroughs, and 684, or nearly one-third, were caused by falls, explosions, the collapse of earth in excavations, premature blasts, and falling rocks and timbers. The river tunnels were pushed forward at the cost of 68 lives, or 43 in the Pennsylvania terminal works, 20 in the Belmont tunnel, two in the subway borings under the East river, and three in the Hudson company's terminal at Church and Dey streets.

The erection of the Brooklyn bridge

when he became an invalid from exposure, overwork and anxiety.

The Deadly "Bends."

The centers of interest in this great engineering feat were the caissons—huge wooden boxes sunk 40 feet below the water line, to hold the foundations—and in these caisson disease, or "the bends," caused endless anxiety. The disease is the more dangerous because the physicians have not made up their minds precisely what it is. Men who work under compressed air in tunnels or caissons are seized with cramps, severe pains in the joints, and dizziness, and are doubled up like jackknives. Not infrequently paralysis and death follow. The reports of the building of the Brooklyn bridge show that there were 28 cases of "the bends," three of them ending in death.

While the caisson work was under way a disastrous fire occurred in the box on the Brooklyn side in December, 1870. The chamber was flooded, and the damage cost weeks of labor and delay. On the day of the fire Col. Roebling spent seven hours in the caisson. When he returned to the surface he was partially paralyzed. This was one of the causes of his ill health.

There were between 30 and 40 fatal accidents while the towers and superstructure of the bridge were building. Three of the workmen were killed by falling derricks on the Brooklyn tower. Two more fell from the Manhattan tower and received fatal injuries.

Border on Humorous.

Some of the escapes, miraculous as they seemed to be, were not without their suggestions of humor. One workman fell from the Manhattan anchorage to the ground, 80 feet below, struck a pile of lumber, and lived to tell of it. He struck the lumber with such force that he broke one of the planks neatly in the middle. Another workman plunged into one of the well holes in the Brooklyn tower. At the bottom, 104 feet below, was a pool of water with an empty cement barrel floating around in it. The falling man landed on the barrel and rolled off into the water. He was only slightly hurt.

An unprecedented record was made when the Williamsburg bridge was built between 1897 and 1904. Al-

sank deeper and deeper beneath the river bed, until, when the workmen were 107 feet below water level, the shifts had been reduced to two a day of 45 minutes each. The "sand hogs" were provided with dressing rooms, hot baths, steam elevators to carry them to the surface, and plenty of hot coffee. Some of the men were attacked by caisson disease, but none of them ended fatally.

This great public work was not to be accomplished, however, without the usual tribute of human life. The working force on the bridge varied from 400 to 800 men. Twenty of them were killed, mostly by falls. As was the case with the Brooklyn bridge, some of the escapes were grotesque, some almost miraculous.

Williamsburg Bridge Fire.

Many New Yorkers will recall the splendid spectacle one night early in November, 1902, when burning oil and woodwork atop the Manhattan tower of the bridge shone over the city like a blazing meteor. Then the firemen, powerless to fight the blaze 100 feet in the air, watched the flames spread to the swaying foot bridges until they became great festoons of running fire.

Several men were on the bridge at the time, but they all escaped. One

workmen, three belonged to the engineering staff, and 17 were persons not connected with the operations. In the two years the subway cost 16 lives, all but one of the victims being workmen. Again in 1902 the list was formidable. Twenty-one lives were lost and 214 persons were hurt, 199 of them being employes.

Dangers of Compressed Air.

With all precautions it is apparently impossible to prevent "the bends" claiming its victims. Two "sand hogs" died in one day last October, for instance, because, as the doctors believed, they had passed too quickly from the compressed airlocks to the surface. A conspicuous example was the death of young Channing Bullard on January 8, last. Bullard was a big, husky fellow, a graduate of Cambridge Latin school, and an expert electrician. He started to learn tunneling, and decided to begin at the bottom by becoming a "sand hog." He passed the examinations and went to work on a Monday morning as a hydraulic fitter in the Pennsylvania tunnel under the East river. When he came to the surface that night he almost fainted with "the bends." The physician took him back into the tunnel, put him in the medical airlock at the foot of the shaft, and, as is

SAFEGUARD THE HOME

GOOD CITIZENS ARE THE BULWARK OF THE NATION.

EDUCATION AND PROTECTION

Two Vital Things to Be Considered by Those Who Would See the Greatest Progress and Advancement.

Where is found the greatest advancement and civilization there is also found among the people the highest type of fealty and love of home. The American homes are the most substantial pillars of the nation's greatness, and in American citizenship is found the bulwark of our republican government.

Where the home life is ideal, there is found genuine patriotism which is always commensurate with the enlightenment and the domestic happiness of the people. How important it is then that every safeguard be thrown about the home, which is the hotbed where are produced for development all the strength that is necessary for the perpetuation of a government and the maintenance of a nation's greatness.

The student who will study into conditions of the countries that are continually wrecked by internal turmoil, such as Russia and the Central American republics, will discover the homes are far from ideal homes, and that there is an absence of the love of country that should be found in the hearts of its citizens. There is a duty that involves upon all, and which is due to the generations growing and to come. The duty is to surround the home with such environments as will make it attractive and develop in the growing youth the highest qualities of manhood and womanhood. Where the people are oppressed by monarchy and feudalism there is no incentive to develop the highest state of home life. In America where all are upon an equal plane and opportunities are open to every citizen, and where the people are secure in their rights to homes, there is every reason why each one should make the greatest endeavor to found for himself and his progeny a residence place that will be sure from intrusion and be an incentive to higher mental and social development.

Education is all important and no other country in the world offers to all such glorious advantages to receive enlightenment as does the United States. It is important that the home be located near good schools. Good schools are generally found where there are good homes and good towns. The quality of citizenship of a community can generally be gaged by the standard of its educational institutions. It is important to the home builder that the town wherein he is located or which he may reside near, be a progressive place. And the better that this town be, the better will be its educational facilities for the youth. It is essential to the greatest good of a community that it be realized by all residing within it that the more wealthy it can be made, the greater will be its advantages both as to education and otherwise. By support to home institutions the home is made better in every way. Patriotic citizens will make it their first aim to be loyal to their own home interests and then their state and nation. One who is loyal to home is generally faithful in the performance of all the duties that good citizenship implies.

Who Makes the Town?

The editor of the paper at Coyle, Okla., asks in large letters, "Who makes the town?" To make a town requires the work of many people. It is surely not the man who earns his wages in the town and then spends his earnings elsewhere; nor the farmer who sells his produce to the home merchant and then takes the money to the express or post office and sends it to the Chicago mail order house for the goods he needs; nor the minister who is paid for preaching by the business interests of the place, and spends his spare time in working up grocery clubs for an outside concern. No, brother, these men do not make towns.

Gov. Folk on Home Trade.

"We are proud of our splendid cities and we want them to increase in wealth and population and we also want our country town to grow. We wish the city merchants to build up but we also desire the country merchants to prosper. I do not believe in the mail order citizen. If a place is good enough for a man to live in and make his money in, it is good enough for him to spend his money in."

Misfits in Songs.

"I'm going to see a new American play to-night," she was saying. "It's by an English author. All the best American plays these days are written by English authors."

"I hope they are more apropos than the songs they write," remarked her friend. "Have you forgotten the English song that had a chorus about the 'Cotton fields way down in Old New Jersey'?"

Killing the Small Towns.

It is impossible to build up towns without there being business to employ the people who reside in them. The mail order system of doing business is killing off the small town, and as a result the farmers residing near them suffer by having a poor market, and poor schools and other blessings of the kind that go with the live town. Not alone this but farm values are kept down.

NO TIME FOR STUDY.

People Who Are Either Too Busy or Too Indolent for Self-Improvement.

That person who takes no interest in affairs of his fellow men, who fails to keep himself informed as to what is transpiring around him, is far from being either progressive or well-informed. These days when papers and magazines are so plentiful and so cheap, there is little excuse for the average person not keeping closely in touch with events, and particularly keeping enlightened as to what is transpiring that may affect his own individual interests.

One of the great beauties, and an extraordinary privilege of our American form of government, is the right of every citizen to take a part in public affairs and particularly in governmental transactions. How many follow party leaders, perhaps blindly, and too late find that they made errors without not having understood the situation? How many who are negligent in the study of measures that are brought up for consideration both by state and national legislative bodies, and too late find that unwelcome laws were enacted that directly oppressed certain classes to the advantage of others? How many people are gathered in by alluring promises made in the finely printed literature sent broadcast through the country for the purpose of exploitation of fraudulent stock companies, just through not keeping informed as to the means and methods employed by schemers to entrap the unwary? It is conservatively estimated that each year more than \$50,000,000 are taken from the earnings of the people just through the operations of fraudulent mining, oil, insurance and like concerns. It would be impossible for the promoters of such frauds to exist were the people careful readers of the newspapers and the magazines, the pages of which are filled with accounts of the doings of "get-rich-quick" schemes.

These days there is every opportunity for self-improvement. Rural deliveries carry papers to the most remote farms, and telephones connect the farmhouses in the average community. If the people were only to utilize the means so close at hand, and to take the time to read, and examine into such propositions as interest them, there would be less cause for complaint on the part of those who perchance get their "fingers blistered." It is evident from the success that exploiters of schemes meet with, that the majority of people lack good business judgment, or that they are blinded by some inherent gambling desire. It is always a safe plan to avoid any investment that offers more than legitimate returns on an investment. Any proposition that will pay even ten per cent. a year, and where the principal is secured, can find all the capital that may be required for its operation, without calling upon the general public. It is only the uncertain kind of investments, the ones that are a "gamble," such as mining, and the like, that are most prominent in the advertising columns of the papers. The basis on which the promoters work, is the inclination of the people to seek great returns for little money. It is the same sentiment that allows numerous establishments located in different parts of the country to dispose of cheap goods at enormous profits through holding out to the people the promise of extraordinary values. The well-informed man will avoid all kinds of investment schemes that are designed to draw money from the pockets of the people, and will also refuse to buy any "pigs in bags," it matters not whether the matter of barter be stocks and bonds or the necessities of life.

Contrary to Home Building.

Trade is the life of the agricultural town. Any system that diverts this trade is injurious to the community. Here lies the evils of the mail order system. By drawing the trade from the towns, the principal support goes, and with its going disappears the employment for the people, the school system, and the churches and all the advantages that the town affords to the people of the community. Not alone this but home markets are destroyed and the farmer finds the value of his land reduced. Have the importance of home trading and home support instilled into the minds of the farmers in general, and there will be a rapid falling off of the catalogue house patronage.

Importance of Good Roads.

The town that has good roads leading to it is blessed. Surely there is no more disagreeable thing, nor anything more adverse to the business interests of a place than impassable boggy roads. There is a little excuse in the well settled community for poor roads. It may in the beginning be somewhat expensive to put the roads in order, but in the end it will prove that the saving in wear and tear on wagons and horses will well repay all the additional expense. And to the town good roads are almost vital. The average farmer would rather drive three or four miles farther to a town over good roads than do his trading when it is necessary to go hub deep in mud to the nearer place.

Adulterated Foodstuffs.

Recently a number of samples of coffee, extracts and canned goods sent out by a premium giving concern were examined by chemists in Missouri and in South Dakota and found to be greatly adulterated. These goods were sold at prices as high as the local grocers charge for the best class of articles. Those who are careful of health should not buy foodstuffs that comes from the mail order houses, or from the premium giving concerns.



of them crossed the traverse platform from one blazing foot bridge to the other just as the burning structure fell. For awhile he hung there over the river swaying to and fro like a spider whose web is torn by the wind. Then he climbed to the big cable overhead and crawled slowly to the Brooklyn tower.

When the bridge was nearly finished a riveter slipped on an icy platform and fell 150 feet to the East river. He turned several somersaults on his way down, struck the water with a great splash, and was fished out almost unharmed. Later a riveter's apprentice stepped on a greasy girder, slipped and fell to the ground, 100 feet beneath. He landed in a heap of sand, got up and looked around, as he said later, "to see if he was dead." His only injuries were a broken arm and some bruises.

Lives Lost in Subway.

In the building of the subway there have been nearly 750 accidents, costing 90 lives, or four victims for every mile of track. Hardly had the work been started, in 1900, when falling rock in the south heading of the One Hundred and Sixty-eighth street tunnel killed five workmen and injured two others. A similar accident in one of the Murray Hill tunnels cost the life of Maj. Ira A. Shaler, a subcontractor. Chief Engineer William B. Parsons, who was with him, had a narrow escape.

The explosion of dynamite in the same section of the work, near Forty-second street, on January 27, 1902, shattered the windows for blocks around and killed five persons, four of them being in the Murray Hill hotel. In October, 1903, another fall of rock near Fort George killed ten workmen.

It was not these more serious accidents, however, that swelled the list of dead in subway building to a formidable total. Rather was it the casualty to single workmen or to some careless bystander—death in the dark recesses of the East river tunnels or a Harlem bluff, the results of a misstep that sent a workman crashing into the depths of an open trench, injuries from falling timbers, or lives snuffed out by miscalculated blasts, or an avalanche of soggy soil. In 1900, when the subway was started, 27 workmen and eight outsiders were involved in accidents more or less serious. Constructive work was in progress at many points in 1901, and the number of casualties was swelled to 176. Of those killed or injured, 158 were



between 1870 and 1883 advanced to the accompaniment of casualty and death. John A. Roebling, the first engineer in chief, lost his life as the result of his responsibilities and an injury received while at work on the bridge. His eldest son, Col. W. A. Roebling, succeeded him, but the bridge was still in its early stages

though as many as 250 men worked at once under compressed air in the caissons, not a single death from "the bends" was reported. The hard lessons of the Brooklyn bridge caissons had been well learned. At first the "sand hogs" worked in eight-hour shifts. The working periods were gradually reduced as the caissons