

## WONDERS OF OUR TIMES.

## GREAT ENGINEERING FEATS IN ALL PARTS OF THE WORLD.

London's Big Tower and Bridge—Railways Under and Over Mountains in Both Hemispheres—How Niagara Falls Will be Harnessed.

The great tower, now under construction in London which owes its origin to the energies of Sir E. W. Watkin, M. P., deserves first place, as a worthy rival to the great Eiffel tower, the engineering boast of France says an English paper. This tower, which is being erected at Wembley Park, where a special station has been already opened, fourteen minutes from Baker street station, is being actively pushed forward. The foundation works have been completed, and the laying out of the grounds is so far advanced that it is expected the park, which covers 180 acres, will be opened in the spring. The foundations are composed of huge concrete blocks, which vary in depth from 28 ft. to 60 ft., according to the level of the land. The tower itself will measure 960 ft. in circumference at the base, and 1,100 ft. in height, or 150 ft. higher than the Eiffel, while it will be larger than its prototype in every way. The material destined for its erection is polished steel. The summit will be 1,450 ft. above sea level. The tower itself is expected to take about eighteen months to build.

The Tower Bridge is another great London engineering venture which is rapidly approaching completion, although the final date of opening for traffic has had to be shifted forward several times. This bridge, which is built on the "basculin" principle, presents a novel feature in the centre span, which is 200 ft. wide and cut in halves, which are to be raised and brought flush with the towers by machinery concealed within them. When open for passage of vessels foot-passengers may cross by a lofty footpath to which access is obtained by staircases and lifts within the towers. These immense piers in the bed of the river are said to be the largest in the world. The total length of bridge and approaches is 2,640 ft. About 31,000,000 bricks, 19,500 tons of cement, 70,500 cubic yards of concrete, and 15,000 tons of iron and steel will be utilized in the structure.

When the great Siberian Railway chain—at present being constructed—is finished, Russia can boast of possessing the greatest railway in the world. This tremendous system will stretch right across the immense territory of Siberia, no less than 4,785 miles, or twice the length of the Canadian Pacific Railway; and the total cost, inclusive of rolling stock, etc., is given £36,765,000 or £7,680 per mile. This very low cost is due to the favorable nature of the ground for engineering operations and the absence of huge Parliamentary expenses and compulsory purchase of land, which have, in our country, made railways so costly. The first sod of this huge undertaking was cut by the Czar, at Vladivostok, on 24th May, 1891. On the eastern section as many as 12,000 men are employed, and part of the line has been already opened for traffic.

The Trans-Andine Railway in South America deserves mention, owing to the tremendous engineering problems to be solved in crossing the great mountain chain forming the backbone of the continent. Of this railway, begun twenty years ago, and reaching from Buenos Ayres, on the Atlantic, to Valparaiso, on the Pacific—a stretch of 870 miles—only the completing section in the heart of the Andes is unfinished. The Andes are crossed by the Cumbre Pass, 13,045 ft. above sea level. Of this altitude, 2,000 ft. are cut off by a three-mile tunnel, and altogether among the mountains there are five tunnels, with a total of over ten miles, while in the mountain section the locomotives, for sixty-five miles of the line, have toothed wheels to work on the rack system when necessary to surmount the heavier gradients.

It may well be imagined that driving a tunnel in the heights of the Andes is quite a different matter from the same work performed at ordinary levels in settled countries. The workmen, even though accustomed to living at great elevations, have to be acclimated to the rarefied air, and this difficulty is forcibly exemplified in the case of the loftiest railway tunnel in the world—that being bored through the Peruvian Andes near Hualgayuta. This is the highest village in the world, 15,635 ft. above the sea, or only 100 ft. lower than the summit of Mont Blanc. Near this village a tunnel 3,847 ft. long, is being bored through the summit of the mountain, 600 ft. above the line of perpetual snow. This certainly may take rank as one of the most extraordinary of railway engineering enterprises.

The Alps have been tunneled through so frequently that the proposal to bore them once more, this time below the famed Simplon Pass, causes no surprise, though this tunnel will be the longest of the lot—12½ miles in all, about three miles longer than the St. Gothard tunnel. This tunnel, which is estimated to cost 100,000,000 francs, will present a novel feature, being single with double railway track in its northern half, while the southern half will consist of two parallel tunnels, each with a single track, this arrangement being adopted with a view to improving the ventilation. There is, however, another proposal to cross the Simplon Pass (6,600 ft. high) by a railway, the steepest section of which would be built on the cog-wheel system, with a tunnel five miles long, costing in all 30,000,000 francs.

The highest mountain railway in Europe is the Brienz Rothhorn railway, which was opened in November, 1891, and ascends to a height of 5,006 ft. at the summit level. The journey is performed in 1½ hours, and the steepest gradient is one in four. It is purely a rack and pinion line throughout, and is further remarkable from the short time in which it was constructed, having been begun in October, 1890. Thus in little over a year this was finished, though the work necessitated the boring of ten tunnels, the bridging of several streams, and the building of heavy stone dams. Another remarkable mountain railway is that up Pike's Peak, in Colorado, which

was opened in the summer of 1891. This line, nine miles long, climbs to a height of 14,147 ft. above the sea level, with a maximum gradient of one in four. This is also a rack rail line; there also difficulty was experienced in the higher portions from the rarity of the air. There is a mountain railway in the Katskill mountains, New York state, 7,000 ft. long, which is worked by cables driven by a drum at the summit, where the steam engines are placed.

The works in progress for the utilization of the immense power continually running to waste at Niagara are rapidly approaching completion, and these have been described as but the beginning of perhaps the most engineering feat ever undertaken. The great tunnel has just been finished. This, which is 6,700 ft. long, 28 ft. high, and 18 ft. wide, runs from the bottom of a great shaft, 140 ft. deep, to which the water is brought from above the Falls by a large canal, and running parallel with the river empties itself below the cliffs under the suspension bridge, after having set in motion the series of great turbines which are intended to work the dynamos to transmit power electrically to any desired point. Only 150,000 horse-power of the 17,000,000 which it is calculated the Falls can supply will be absorbed by the Cataract Construction Company's works. It is intended to sell power at the rate of twenty dollars per horse-power per annum up to 3,000 horse-power; for powers beyond the charge will be ten dollars per horse-power.

## BURGLARY HOLDS ITS LEAD.

The Skill of the Safe Crackers Still a Little Too Much for the Safe Makers.

A clever safe expert talking of the burglaries yesterday said: "The work seems to have been done by men who thoroughly understand the beating of a combination burglar-proof safe. You see, there are two styles of safe-crackers, as we know them, the new and the old. That's how the police get a clue in working up a case. The old-style crackman used powder. He first drilled a hole beside the lock and then blew it off with a charge of powder. The improved method is to first knock off the spindle and then drive the combination lock back into the safe. Then all the burglar has to do is to open the safe door and help himself. The 'Spike Hennessy' style of safe burglar is going out of fashion. During the past ten years only five safes have been blown open. It makes too much noise. All the others have been touched in the latest style. The Assessor's safe was tampered with a few months ago, and it was as plain as day that it was the work of an amateur who had just learned enough of the quiet, easy way of breaking open a vault to knock off the combination knob, but there his knowledge of the business ended. Instead of drilling in a little to one side of the combination and driving it in, he thought it was necessary to bore in through the keyhole, as it was a key and combination safe. That settled it. He might have worked a week that way and he couldn't have got in. The result was that he simply injured the safe and caused the city the expense of having it opened."

"The burglars of today are more considerate than they used to be. If they couldn't get in in the days of yore they wrecked the safe just for satisfaction. I recollect a singular affair in the little place called Smartsville, up in Yuba county. One night burglars broke into the general store to tap the safe that was supposed to contain at least \$10,000 worth of gold deposited by the miners the day before. It was an iron affair, weighing about 700 pounds. The rascals were afraid to blow it open for fear of arousing the town, so they simply packed it off into an adjacent canon, blew it open, and took everything in sight. They only got a few hundred dollars, though, the gold having been secretly sent to Marysville, where it was banked."

"Several years ago the safe of a wholesale commission house in this city was rifled, and it was several hours before anyone could find out just how the job had been done. You know it is a common thing for men working in the office to put their memorandums on the side of the safe. Well, this one was simply covered on one side with pieces of paper. The burglars got in one night and soaked off one of the papers and cut into the side. They could not finish the job in one night, so they pasted the paper on again and came back the next evening. Then they finished the job, and pulled out everything of value in the safe. When I was called in to solve the problem of how the safe had been looted without touching the door, I lifted up a book and saw the hole from the inside. Then one of the young men employed remembered having seen some white dust on the floor beside the safe the day before the money disappeared. He had thought nothing of it, and the safe crackers had an opportunity to do the second night's work."

"Nowadays," continued the expert, "merchants do not place the confidence which they used to in steel vaults. They go to the safe deposits with their valuables. In many of the large houses the safe is simply kept to put the books in to protect them from fire. To save the box from mutilation by burglars they post the combination beside the lock and label it distinctly. In several places the notice reads:

"This is the combination. Do not break the safe open, but follow the directions written hereon and you will get in without trouble."

"One gentleman has posted this card: 'Our valuables are in the safe deposit. Please don't get mad and have fun with the safe.'"

"Others do not lock their safes, even. They simply shoot the bolt."

"When the building on Market street next to the Nucleus was being constructed a shirt manufacturer doing business in the latter structure was very much disturbed over the safety of his wealth. He had a safe, but he was not at all confident that it could not be entered. One night he had \$1,500 on hand and was at a loss what to do with it. A bright idea struck him. He rolled the money, which was all in silver, up in a bundle and placed it beneath the safe. Sure enough that very night the steel vault was opened and the burglars got away with a few dollars in change. The mass of silver was found all right under the cracked safe."—San Francisco Chronicle.

## Have You Asthma?

After trying every other remedy in vain, thousands have been cured by using Schiffmann's Asthma Cure. Trial package free of druggists or by mail. Address Dr. R. Schiffmann, St. Paul, Minn. Mention this paper.

## SOME QUEER OLD BONES.

Anatomical Curiosities to be Found in Exhibition in London.

One of the queerest collections of old bones is that got together round the hall of the Royal College of Surgeons, Lincoln's Inn Fields. Skulls and skeletons from all the ends of the earth are gathered into glass cases—a regular oecumenical council of all the nations under the sun, who look as though they may have come together to discuss their many differences, but have all been struck mute with astonishment at the discovery that, apart from mere surface diversities, they are so much alike. There they stand, grinning at each other, as though fairly tickled to find how much, after all, they have in common.

In one glass case stands the herculean framework of Charles Byrne, the once famous Irish giant, who, when he died, was found to measure eight feet four inches, and now stands here a skeleton nearly eight feet high.

With his enormous height and bulk, he was, of course, an object of much curiosity during life, and appears to have had a suspicion that even the grave might afford him no complete refuge from idle sightseers. Before he died he bequeathed to two fishermen a hundred pounds each, to be paid to them on condition that after his death they would take his body out to sea and drop it overboard.

The big man had apparently got an inkling of the special interest taken in him by Hunter, the famous surgeon, who founded this museum, and who was known to be anxious to get possession of his skeleton. Hunter had, in fact, made up his mind to have it, and when the giant died he sought out the two fishermen. He told them he did not wish to prevent them earning their two hundred pounds by throwing the body into the sea, but if before doing so they would tie a rope to it, so that they might afterwards haul it up again, he would give them another two hundred.

So it was decreed that he was not to be hidden away in the sea-bottom, but was handed over to the anatomist, and here he is, doomed to perpetual exhibition side by side with the puny framework of a dwarf, exhibited in London in the early part of the century, and measuring now just twenty-four inches in height. This was an adult, but there is one Lilliputian frame of a child, about sixteen inches in height, the smallest in the collection of human beings actually born into this toasty-turvy world, though there are some others arranged in series, and running down to somewhere about an inch in length.

But queer old bones upon which probably most people would look with most interest in this collection are those of Jonathan Wild, the infamous wretch who made his own living by swearing away the lives of others, and who eventually was dragged to Tyburn through the midst of an exasperated populace, from whom he was with great difficulty protected, and hanged. The villain stands here, grinning as though pondering on the past, and could not help chuckling over it.

One of the grimmest-looking fellows, now that he has been stripped out to his bones, is Nulla Nulla, in the museum of St. Thomas's Hospital, the famous Australian native who, a generation or two ago, made things so lively for some of the settlers out there. He has got with him the identical cudgel with which in his day he knocked out nobody knows how many persons' brains. He was actually buried once, but so famous was he here in England that his remains were dragged up, and his bones handed over to the articulator, to be neatly wired together and shown here in the middle of London.

Of odd little figures of men, one of the oddest ever seen in London was one that was brought up from somewhere in Sussex, at the time the International Medical Congress sat at Burlington House a few years ago. It was the skeleton of a man whose bones seemed as brittle as glass, and who appeared to have been always tumbling about and breaking himself. He was born with both arms broken, and all his life long was subject to this curious infirmity. Nevertheless, he managed to attain a height of five feet four, and to live to be sixty years of age. But the constant breaking and contortions of his flimsy bones gradually reduced his height, and his health slowly gave way. As exhibited at Burlington House, his frame was not much over a yard high, if any, and a singularly queer, twisted sort of structure it was at that. For all his affliction, however, he managed to find a wife, and he had two children, both of whom, it was said, manifested the same distressing peculiarity.

## An English Typewriter Story.

A gentleman engaged a typist—who was young and pretty—and some six months afterwards was called upon by another gentleman, who was contemplating a similar step, but wished first to find out "how it worked."

After some conversation, the caller asked No. 1 how he found his new clerk.

"Oh, splendid!" cried No. 1, with enthusiasm.

"Seems rather warm on the subject," reflected No. 2; "think I'll put another feeler."

So he put it.

"Quick? Greased lightning was nothing compared with her?"

"I'm. Anxious to please, I suppose?"

"She managed to please me," said No. 1.

"Gots through a lot of work?" asked No. 2.

"Got through—" corrected the other.

"Why—she's gone? Not gone? Then you don't mean to say that you've m—"

"Married her? Yes, by thunder, I do. Shortly after she engaged herself to me I engaged myself to her, and—don't congratulate me yet—she's very nice, but—"

but I've had to take on her sister in her place, and she's—awful! Good-bye, old fellow! Be careful!"—Cassell's Journal.

## Some Successful Novels.

An Australian and an English novel seem to compete very closely for the largest circulation within the last five years. There is "The Mystery of a Hansom Cab," by Mr. Fergus W. Hume, first published in Australia, where 25,000 copies were sold within three months. When published in London, in 1887, its sale was such as it is said has never been surpassed. The publishers' books showed that within five months after publication, on December 3rd of that year, no fewer than 372,000 copies

were sold. "Robert Elsmere," by Mrs. Humphrey Ward, has had an immense sale. In five months it passed, in the three volume form, through seven editions; and through thirteen editions in the year of its publication, 1888. By 1891 over 60,000 copies of the one-volume edition had been sold in England, and about 500,000 in the United States of America; the sale in this latter case consisting largely of pirated editions. It has also been translated into German, Dutch, and Danish. The "Silence of Dean Maitland" ran through ten editions in the first year of its existence.—Tit Bits.

## THINGS OF VALUE.

To a woman's eyes, indifference, not cowardice, is the unpardonable sin in a man. The unbestowed caress of the lover who longs to kiss his sweetheart, but dares not, is valued infinitely more than an indifferent salute.

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Sydney, C. B.

A young clergyman seems to have compressed the whole body of his sermon on "Deceit" into the following: "Oh, my brethren, the snowiest shirt-front may conceal an aching bosom, and the stiffest of all collars encircle a throat that has many a bitter pill to swallow."

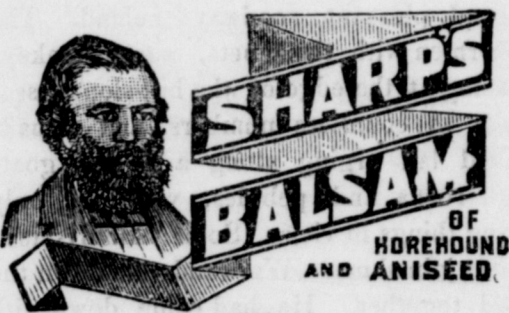
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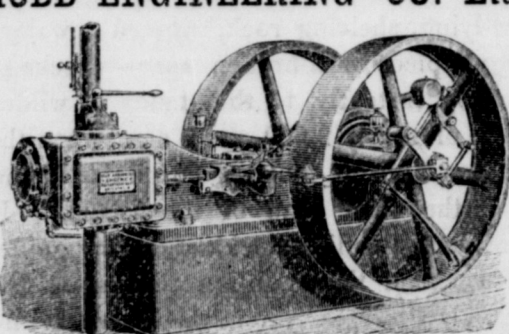
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THE NEW WAY;

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