CHRISTIAN VISITOR.

A Family Newspaper: devoted to Religious & General Intelligence.

REV. E. D. VERY, "BY PURENESS, BY KNOWLEDGE—BY LOVE UNFEIGNED."—St. Paul. EDITOR.

Volume II. SAINT JOHN, NEW-BRUNSWICK, FRIDAY, AUGUST 10, 1849. Number 29.

A MOTHER'S TEACHINGS.

BY LYDIA H. SIGOURNEY.

The boy sat lis'ning to the words
That from his mother fell,
Pure lessons, wrapped in tender tones,
Like music's softest swell.

And oft he marked her musing brow,
With holy silence bright,
And blessed its placid smile, and deem'd
That angels loved the sight.

But when the mother laid her down
To rest in mouldering clay,
The world's temptation o'er him roll'd,
And swept his faith away.

Like birds that scorn the fowler's snare,
He trifled with his fate,
Forgot to seek the Spirit's aid,
Or for its teachings wait.

Yet once as in his midnight watch,
The lonely deck he pac'd,
With the sad, solemn stars above,
And round old Ocean's waste.

Methought HER warning voice, who long
'Neath the cold sods had slept—
Spoke forth from every rushing wave,
That on resistless swept.

Methought a tear-drop like her own,
Fell from a gathering cloud,
That round the beauty of the moon
Had wreath'd its silver shroud.

Methought the searching eye of God,
Flam'd in his secret soul,
And down the proud man bowed with tears,
To own its strong control.

The Tubular Bridge over the Menai Straits.

During the early part of the past week the shores of the Menai, already celebrated for its suspension bridge, which carries the roadway from the Carnarvon to the Anglesey shore, at an extraordinary elevation above the stream at high water, have been crowded by thousands of visitors and tourists, to witness the fixing of the tubular bridge that is to carry the Chester and Holyhead Railway across the same chasm, beneath which a deep and rapid arm of the sea is ever running.

The particular spot at which the Britannia bridge crosses the Menai Straits, is exactly a mile nearer to Carnarvon than the suspension bridge; the railway after leaving the end of the bridge passing close under the Anglesey column. The shores are of the same precipitous and shelving character at both places, but the stream is wider here than at the suspension bridge, being about eleven hundred feet across at high water. It is divided nearly exactly in the middle by the Britannia Rock, which at high water is covered to a depth of ten feet. The rise and fall of the tide is ordinarily twenty feet, and its velocity very great, often as much as eight miles and a quarter an hour. It is from the Britannia Rock that the bridge takes its name, the centre pier being based upon it. It and the Anglesey shore consist of chlorite schist, a very hard and intractable kind of rock, worked with great difficulty; from this, and the circumstance that no coffre-dam was used, and therefore, few hours only could be consecutively spent on the rock, some months were passed in laying the bottom course of the tower. It was commenced in May, 1846, the first stone being laid without ceremony by Frank Foster, Esq., acting engineer of the portion of the railway between Conway and Holyhead, and of the masonry, scaffoldings, &c., of the Britannia bridge.

The stone of which the towers are built is a hard carboniferous limestone or marble, called Anglesey marble. It is obtained from quarries expressly opened for the purpose on the sea-shore at Penmon, at the northern extremity of the Island, where it abounds in great abundance and in convenient strata of every thickness, from 3 to 4 feet downwards. Some of the stones in the work are no less than 20 feet in length, and others weigh from 12 to 14 tons. A great portion of the interior masonry, however, is built of red sandstone, from Runcorn, in Cheshire. This is a very soft stone, and easily worked, but at the same time very durable, especially when not exposed.—The stones in the towers are all left with a rough or quarry face, except at the angles, and in the recesses, and the entablature at the top. This circumstance, coupled with their immense size and height, gives the towers a truly noble appearance. The abutment on the Anglesey side is 143 feet high and 173 long. The abutment on the Carnarvonshire side is nearly as large, but owing to the elevation of the ground, the masonry is less in altitude.—The wing walls of both terminate in splendid pedestals, and on each are two colossal lions, couchant, of Egyptian design. These lions, like the tube they adorn, are on a gigantic scale, each being 25 feet long, 12 feet high, though crouched, 9 feet abaft the body, and each paw 2 feet 4 inches. They contain 8000 cubic feet of stone, and weigh 120 tons.

When the whole structure is completed it will consist of two immense wrought-iron tunnels or tubes, each considerably upwards of a quarter of a mile in length, placed side by side, through which the up and down trains respectively will pass. The ends of these tubes rest on abutments, the intermediate portions being supported across the Straits by three massive and lofty stone towers. The centre tower, as has been observed, stands on a rock, which is covered by the tide at high water. The side towers stand on the opposite shores, each at a clear distance of 460 feet from the centre tower. The abutments are situated inland, at a distance of 230 feet from the side towers.

The Britannia tower is 62 feet by 52 feet 5 inches at the base; it has a gentle taper, so that where the tubes enter it is 55 feet by 45 feet 5 inches. Its total height from the bottom of the foundation will be, when completed, nearly 230 feet; it contains 148,625 cubic feet of limestone, and 144,625 of sandstone, weighing nearly 20,000 tons, and there are 387 tons of cast iron built into it in the shape of beams and girders. The total quantity of stone contained in the bridge is 1,500,000 cubic feet.

The land towers are each 62 feet by 52 feet 5 inches at the base, tapering to 55 feet by 32 at the level of the bottom of the tubes; their height is 190 feet from high water; they contain 210 tons of cast-iron in beams and girders.

The bridge itself is divided into four spans, namely, the two small spans at each end, which are over the land, and are each 230 feet wide; and the two principal spans, which are over the water, and are each 460 feet wide. The small tubes, as they are termed, or those which cross the land, being constructed on the platforms, at their ultimate level, do not require any removal. Although called the "small tubes," their span is vastly greater than that of any other railway bridge in existence, the Conway tubes alone excepted. But the large tubes, which are to cross the water, were constructed on timber platforms, along the beach, on the Carnarvon shore, just above the level of high water. The length of one of these tubes, as constructed on the platform is 472 feet, that is twelve feet longer than the clear span between the traverse. This additional length is intended to afford a temporary bearing of six feet at each end after they are raised into their places, until there is time to form the connection between them across the towers. Our readers will better appreciate the great length of these tubes by remembering that if one of them were placed on end in St. Paul's Church-yard, London, it would reach 107 feet higher than the top of the cross!—The span is much greater than has ever before been attempted, except in bridges on the suspension principle. The length of the iron arch of Southwark-bridge, in London, the largest rigid span in this country, is but 240 feet.

Each tube consists of sides, top, and bottom, all formed of long, narrow wrought-iron plates varying in length from 12 feet downward.—The direction in which these plates are laid and rivetted together is governed by the direction of the strains on the different parts of the tube. They are of the same manufacture as those for making boilers, varying in thickness from three-eights to three-fourths of an inch. Some of them weigh nearly 7 cwt., and are among the largest it is possible to roll with any existing machinery. In the sides the plates are 6 and 8 feet long, and half an inch thick, but the longest plates are in the bottom being 12 feet long, by 2 feet 4 inches wide, arranged in double layers. At the top they are 6 feet in length and 1 foot 9 inches in breadth. The connection between top, bottom, and sides, is made much more substantial by triangular pieces of thick plate, rivetted in across the corners, to enable the tube to resist the cross or twisting strain to which it will be exposed from the heavy and long continued gales of wind that, sweeping up the channel, will assail it in its lofty and unprotected position. The rivets of which there are 2,000,000 each tube containing 327,000, are more than an inch in diameter. They are placed in rows and were put in the holes red hot, and beaten with heavy hammers. In cooling, they contracted strongly, and drew the plates together so powerfully that it required a force of from four to six tons to each rivet to cause the plates to slide over each other. The total weight of wrought iron in the tube floated on Tuesday is 1600 tons.

The height of the tubes is not the same at all parts of their length. It is greatest at the centre, in the Britannia Tower, where it is thirty feet outside, and diminishes gradually towards the ends, at which, in the abutments, the external height is only twenty-two feet nine inches: the top forms a regular arch (a true parabolic curve), and the bottom is quite straight and horizontal. The clear internal height is, on account of the double top and bottom, less by four feet than the external, being twenty-six feet at the centre, and eighteen feet nine inches at the extreme end. The land tubes are, outside, twenty-seven feet, and inside, twenty-three feet high at their smaller ends. The internal width, from side to side, is fourteen feet, though the clear space for the passage of the trains is but thirteen feet five inches. The whole width, outside, is fourteen feet eight inches.

Each tube contains about ten miles of angle and T-iron, and the whole bridge sixty-five miles. The weight of the wrought iron in one of the large tubes is estimated at about one thousand six hundred tons, of which five hundred are in the bottom, six hundred in the sides, and five hundred in the top.

Tuesday, the 19th instant, was the day fixed upon for the floating of this stupendous work. The attendance of visitors was immense. The scene as early as six o'clock presented a very busy appearance, multitudes of men depositing the buoys, and shipping the enormous cables from the London and Manchester platforms of the work. The experiment of floating was to be made in the evening at seven o'clock, but when the time arrived the attempt was suddenly averted by the breaking down of a captsan, and the floating was postponed till the rising of the next tide. The accident arose from no insufficiency of strength in the captsan itself, but from the fact of the shore lashings behind the tube not having been cut away or detached from the tube, and, as a natural consequence, while the captsan was employed in drawing the tube out into the stream, the shore lashings detained it, and the captsan, failing to overcome the resistance, started, strained, and broke. On Wednesday morning the captsan, on the renewed attempt, again failed, but at half past nine o'clock in the evening the final operations for placing this magnificent work were completed, and the tube fixed firmly upon its bed amidst the loudest demonstrations of approbation from all the spectators assembled upon this interesting occasion.

In additition to Mr. Stephenson, Captain Claxton, Mr. Clarke, Mr. Brunel, and Mr. Locke were on the tube, rendering valuable and unceasing assistance throughout the perilous process. The applause of the multitude, mingled with salutes of cannon, continued for upwards of half an hour after the completion of the experiment, which was celebrated by the engineers on the tube and pontoons in successive rounds of champagne. The tube was floated obliquely, and then gradually swung round, with its face to the space between the piers. Arrived here, the next step was one of the most anxious character, seeing that if, from the run of the tide, or any giving way in the great net-work of tackle, or the tube overstepping the line of destination parallel with the piers, the experiment must have failed, and the process of bringing it back would have been one of great difficulty. Fortunately, however, such was the nicety of the arrangements, and skill, and quickness of the directing power on the top of the tube, and the moment of its progress to the spot so geometrically measured, that the success of the final step was unerringly secured by the vigorous action of a giant vice upon the Anglesey end of the tube, which clinched its extremity, and instantly held it fast. The next operation, that of elevating the tube to its permanent position, will be accomplished as soon as possible. This is to be done by huge hydraulic presses, of a magnitude commensurate with the size of the works, one cylender alone being almost large enough at the entrance to contain a man standing, and of the ponderous weight of forty tons. It is the most powerful machine ever constructed. The two end tubes will now be raised, and it is expected from the rapidity of the movements that this great iron highway over the Straits will be ready for the passage of trains in the autumn.—*Wilmer & Smith.*

The Wise Men not all Dead yet.

We heard of one young man, bound to California, who took his blanket and slept one night on an open porch. The next morning he concluded not to go.

Another took a yoke of oxen, and travelled about six miles through the mud. He found it was a pretty hard day's work. The next day he gee-hawed them back again, and that evening took his name off the emigrant's list.

A young man got about forty miles, after being out from home ten days. He began to count the cost for the first time, and his calculation led him to see that if he was to travel at that rate all the time, all the gold might be taken up before he got to the Sacramento.—He concluded to return to his father's house.

What is better than presence of mind in a railway accident? Absence of body.