

action of the air is in equilibrium with the action of the water, when the valve No. 2 falls back to its place and prevents the water in the air vessel going back again into the main pipe. The water in the main pipe then having no escape, is again brought to rest, whereupon valve No. 1 falls down again by its own weight, and the process is again repeated. From the air vessel a discharging pipe leads off to the upper story of a house, or any other place where the water is wanted, to which point it is driven by the elasticity of the compressed air in the vessel. Of course the amount of water raised, compared to the whole, will be in inverse ratio to the elevation of the discharging point above the fountain-head. The momentum of the blow forcing the water into the air vessel when the valve closes, was well illustrated at the time the fountain was first put in action on Boston Common, where, it will be recollected, the momentum of water was so great at the sudden stoppage of the jet, as to burst the pipes and deluge the Common.

### THE TELEGRAPH.

It is surprising to contemplate the rapidity with which, in the last few years, magnetic telegraph lines have extended over Europe. For instance, we see it stated that, whereas France, at the close of 1852, possessed lines covering only 1,200 miles, they will have, at the close of the present year, over 8,000 miles in operation. Europe contains some 35,000 miles of telegraph, the United States 42,000 miles. But the triumphs of the past few years in that respect appear small and contemptible, in contrast with those which are reserved for the remainder of this decade. We need only indicate the gigantic works that are projected, and which a few years will see realized, to cast into the shade the fabulous exploits of the gods and giants of antiquity.

First there is the contemplated enterprise of connecting London with Canton, or one of the other commercial ports of China. Then there is the other project of establishing a similar telegraph connection with Australia. It would hardly be believed at the first blush that neither of these undertakings would necessitate the laying of more than four hundred miles of submarine cable in any one continuous stretch; but a careful examination of the globe will remove all scepticism on that point. The Architect of the universe has, it would seem for this purpose, placed islands in the ocean at such intervals as to serve as stepping stones and halting places for the telegraph. There is no doubt whatever as to the feasibility of laying down four hundred miles of submarine cable in one stretch, as it has been already tested to the extent of 350 miles in the line across Black Sea from Varna to Balaklava. Then, again, there is that other gigantic enterprise in contemplation, of connecting the American and European continents by a submarine telegraph extending from St. John's, Newfoundland, to Cork, in Ireland, a distance of over sixteen hundred miles. And even the magnitude of that undertaking is eclipsed by another proposition: to stretch a line around the world, commencing, say, at Petersburg, stretching through Siberia to the confines of Russian America, and traversing the whole breadth of North America to its most easterly limit, and then crossing the Atlantic, either by an independent line or by connection with that which we have just mentioned, and which is to be in operation in January, 1858, a little more than two years hence. By the same time we may have San Francisco bound to New York.—*Herald.*

### A GREAT STEAMER.

MESSRS. NAPIER & SONS, of Glasgow, Scotland, have just launched upon the Clyde, the largest steamer afloat. She is named the *Persia*, was constructed for the Cunard Company, and designed to ply between Liverpool and New York, taking her place in the line in October. The *Persia* far exceeds in length, strength, tonnage, and steam power the *Great Britain* or the *Himalaya*, and exceeds also by no less than 1,200 tons, the internal capacity of the largest of the present Cunard liners.

Her chief proportions are these: Length from figure-head to tailrail, 390 feet; length in the water, 360 feet; breadth of the hull, 46 feet; breadth over all, 71 feet; depth, 32 feet; burden 3,600 tons. According to the strict government rule of measurement, her power is equal to that of 900 horses, according to the plan laid down in Earl Hardwicke's bill, her power is equal to that of 1,200 horses; and according to Jas. Watt's old established rule, she is expected to work up to the pitch of between 4,000 and 5,000 horses. The keel consists of several bars of iron about 35 feet in length each, joined together by long scarfs, and, as a whole, 13 inches deep by  $4\frac{1}{2}$  inches thick. The framing is constructed in a manner at once peculiar and securing the greatest possible amount of strength. The framing of the ship is very heavy.

The hull is composed of several water-tight compartments, so arranged that if one should by any means be stove, the others will remain intact, and thus the possibility of such a terrible catastrophe as that which happened to the *Arctic* is rendered impossible. The weight of the iron in the *Persia* is 2,200 tons. When the engines are on board, and she is fully laden, the weight of the immense mass will be 5,400 tons, at which time she will draw 23 feet of water. Her coal cellars are constructed to receive 1,400 tons of coal. She has accommodation for about 1,200 tons measurement of goods. Steam is the grand agent, and accordingly the *Persia* is only lightly rigged with three masts. Hitherto the largest steamer belonging to the Cunard Company is the *Asia*, but she is only 2,393 tons.

*Collins* far surpassed the Cunarders when he established the *American Line*; but father John, over the water, was not to be thus outdone by his ambitious young son; and therefore, in the construction of the *Persia*, he has taken another stride onward with his seven leagued boots. We shall expect to hear from JONATHAN again ere long. This peaceful and honorable rivalry between nations is one of the most powerful incentives to improvement. If the *Collins* steamers had never been built, the original Cunarders would have been the ultimatum of steam naval architecture.

LOSS OF LIFE IN THE CRIMEA.—The *Paris Presse* quotes Lord Grey's estimates of the loss of life, putting it at 500,000 men in all—250,000 on the side of the Russians, and 250,000 on the side of the Allies. It then gives the Turkish loss at 120,002, leaving, by a very simple process of subtraction, 130,000 for England and France. 50,000 for the former, add 80,000 for the latter, are the conclusions of this estimate of human slaughter.

Men of great genius, but little heart, are they not like the aurora borealis, whose magnificence awes the arctic voyager to silence? But for what are they good? With all their splendor they cause no flower to bloom; in all their light there is no life.