

world, and in fact greatly hinders the mental and material progress of the human race. But it can be readily overcome, in every individual case, by a determined exercise of the will. We hope that our correspondent will turn over a new leaf, let us hear from him more frequently, and so set a good example to his fellow men in general and to other correspondents of our paper in particular, who are afflicted in the manner he describes.

#### STEAMSHIP NOTES.

Among the multitudinous shipping of New York harbor there is always occurring more or less of current interest from an industrial or technical standpoint. We cannot afford room for extended mention of all or even much of this, but some of the items are worthy of note, either as indices to commercial or engineering progress or as illustrations of the way things mechanical are sometimes managed. Of the kind last indicated is an incident that recently occurred to the *Great Western*, an English bluff bowed iron freight steamer on her first trip from Bristol to New York, laden with railroad iron. She had a four bladed propeller, but broke three blades on the voyage, and steamed into Gowanus with rather dilapidated propelling machinery. She carried the usual spare propeller, and on her arrival here was taken to the Erie docks to have it put on in the place of the old one. The usual method of removing a screw from its shaft is to drill a line of holes in the boss and then split it open. But in the present instance, the plan was adopted of removing the keys, taking off the nuts, and driving it off. While doing this, the other propeller was being hoisted out of the after hold. While being swung aft, the lashings broke and the ponderous apparatus fell, one blade going through the dock and another breaking off. This left the parties with a one bladed screw on the shaft and a three bladed one in the mud. All things considered, it was thought best to cut off the one blade of the former to correspond with the diminished length of the broken ones thereof, and so the vessel has started back with her jury screw. Had the affair been under Yankee management, possibly the spare screw would not have been broken, but if it had, there would have been ingenuity enough somewhere about the shop to have lengthened the broken blade with a wrought iron plate.

Nevertheless, however much we may justly claim superiority for inventive skill and adaptiveness, we have to make painful mention of British energy, shown in the progress of iron shipbuilding in England, a branch of industry which we hope to see returning to our own shores. For example, the Anchor line, hitherto almost wholly devoted to freight between New York and Glasgow, is about to increase their previously limited passenger traffic by the addition of new and superior steamers. The company is now building, on the Clyde, seven new vessels which, with those now running, will aggregate forty-three.

While upon the subject of steamers, we may speak of a pair of what may be termed historic marine engines, one of which is lying dismantled at the Continental Iron Works, while the other is doing duty in the *James Adger*. These engines were splendid examples of marine steam engineering, and drove the paddlewheels of Commodore Vanderbilt's famous steam yacht the *North Star*, in which he voyaged along the coasts of Europe a score of years ago, and which, if we remember rightly, so alarmed the officials of the port of Civita Vecchia that they ordered her off. These engines were of the vertical beam variety, of about 1,000 horse power each, with sixty inch cylinders and ten feet stroke. The one at the Continental Iron Works has some of the smaller portions missing; the bright parts are painted over, and it will doubtless some time find an obscure use as a stationary motor. The *James Adger*, in which the other was placed when removed from the steam yacht, will be remembered as the vessel employed in laying the first cable between Newfoundland and the mainland.

The Erie Railway is having built at Chester, Pa., a new iron ferry boat, said to be the first ever designed to cross the North river. The following are the dimensions: length between perpendiculars 180 feet, over all 190 feet. Beam over hull, 36 feet. The depth of the hold 13 feet 6 inches. The power will be furnished by a beam engine with a forty six inch cylinder and eleven feet stroke. The diameter of the paddlewheels is 22 feet and their faces 8 feet, 4 inches. The keel instead of being brought up inside the rudder to form a stern, as in the usual method of construction, is extended beyond the ends of the hull and made to form a rudder guard at each of the ends. The plates at the water line have a thickness of nine sixteenths of an inch, increased at the bows to ten sixteenths. The vessel is to have watertight bulkheads up to the main deck, and is to have iron paddle beams, that is, those supporting the guards at the ends of the paddle boxes. The spring beams which support the outboard bearings or ends of the paddle shaft are also of iron. The keelsons are box keelsons of heavy plate iron, arranged to distribute the weight of the engine upon the bottom. The carriage ways on deck are eleven feet in width. The bows are to be protected by extra framing as well as by the increase herein before referred to in the thickness of the plates. A drop return flue boiler will be put in, as is the case with nearly all or every ferry boat in New York waters.

#### BRIGHT'S DISEASE.

The medical profession generally divide this terrible disease of the kidneys into two forms, the acute and the chronic. The acute form is a simple congestion of the filtering tubes through which the kidneys perform their organic duty. The chronic form occurs when, through neglect or repeated at-

tacks of congestion, granular degeneration, bringing with it structural alteration of the organ, has supervened. The first is curable; the second, though it may be temporarily alleviated, is fatal.

The *New York Times* publishes some valuable statistics, extending over a period of three years, which show that the disease is more rife in certain sections of this than in other countries, especially in New York city. During the first year covered by these statistics, the ratio of deaths from Bright's disease to the total number of deaths taking place in that period was as 1 to 66, the following year as 1 to 55, and the third year as 1 to 42. Comparing these figures with the ratios in other cities, we find that in Boston it is as 1 to 93, Rochester as 1 to 73; and in the old world, in London as 1 to 89, in Glasgow as 1 to 142, in Paris as 1 to 266.

It is considered that the prevalence of the disease in this country is due to two leading causes, climate and intemperance. The experiments of scientific men have shown that alcohol is partly cast off from the system, unchanged, through the kidneys. When alcohol is taken to excess, the circulation in the kidneys is disturbed and irritation and congestion ensue. Wine and beer, although exercising no beneficial effect on these organs, do not tend invariably to injure them, but rather to induce gout. Few are aware of the immense quantity of alcoholic liquors yearly consumed in New York. From the 1st of May 1870 to the 30th of April 1871, 7,440 licenses were issued for the sale of intoxicating liquors, the annual fees on which amounted to \$340,141.91. Estimating the population of the city at 1,000,000, there is one liquor saloon for every 134 inhabitants, men, women, and children. If all the liquor saloons in the city could be placed side by side they would extend a distance of 26 miles; or if situated on Broadway, they would reach the whole length of the street from the Battery to the end of the island, covering both sides of the way. Deducting the women and children who do not drink, an enormous quantity of liquor must be annually consumed by the remaining men in order to support 7,440 saloons. Whisky is the ordinary beverage drunk, and its effect on the kidneys is shown above. The records of the New York Hospital show that over fifty per cent of the cases yearly admitted for treatment were caused by intemperance in the use of alcoholic beverages.

The trying nature of our climate is another prolific cause of this disease. It has been demonstrated that the malady is confined to that part of the earth in which the change of seasons is most marked, and where the annual mean temperature of the air ranges between 46° and 57°. In the extreme northern part of this continent, where cold is the normal condition of the atmosphere, and in the Southern States, where heat is the normal condition, the disease is but little known. In Bombay, the proportion of deaths is 1 in 2,800; in New Orleans it is 1 in 329, and in Providence, where cold is more prevalent than in New York, 1 in 173.

The acute form of Bright's disease may be produced by any sudden chill of the system, undue exposure, or rapid change of temperature. Unseasonable changes of garments and rapid checking of perspiration both tend to bring it on. It is also induced to a certain degree by gout or disease of the heart; one or two trades are particularly liable to it, especially those who work in lead.

A careful study of the causes of the disease, together with the consideration by the facts advanced above, show plainly that vast numbers of persons who now suffer and die under it need never have known such an affliction. Care in keeping themselves warmly clad, avoidance of sudden chills and reckless exposure, and the observance of the simple rules of temperance, would have saved hundreds from premature graves.

#### THE BLACK ROCK BRIDGE OVER THE NIAGARA RIVER.

For three years past, both American and English engineers have worked to lay the foundations for the international bridge for the Grand Trunk and Great Western Railroads, at Black Rock, 4 miles below Buffalo, across the Niagara River, to Canada. The entire length of the structure is to be 1,400 feet, consisting of iron spans resting on eight abutments. The tremendous current in the river which rushes toward the falls has rendered the work one of unexampled difficulty. Caissons and foundations have been sunk and immediately swept away by the torrent, while the river banks below are strewn with the debris of wrecks, showing a loss of millions of dollars.

The entire past year has been unsuccessfully devoted to attempts to erect the three middle piers in a depth of from thirty-five to forty feet of water. Mr. Otto Meyer, of New York, who last winter was engaged to prepare and sink coffer dams, has finally, however, succeeded in sinking one dam so that the work on its enclosed pier has been commenced. The length of this dam is 125 feet, width 32 feet, and depth, to suit the river, 36 feet. It is sharp on both ends, has double sides, closing at the bottom, forming a space three feet wide around the sides for depositing stones, leaving the center of the dam open for the caisson in which the pier is afterwards built. Eight of the largest anchors and chains from New York and Montreal being secured, one the 13th instant the "ship without a bottom" lay formerly moored six feet above the position of the pier to be built.

Preparations were then made for sinking several hundred tons of stones, which were thrown in the apertures on the sides of the coffer dam until it had sunk to within eighteen inches of the river bed. A number of barrels had been arranged previously under water and fastened on the woodwork, their buoyancy lifting the structure about two feet; these were all held by one rope, which being cut, caused the barrels to float and submerge the coffer dam deep enough to strike the

bottom. Six very heavy iron-pointed posts or "spods," running through sheaths or sockets, three on each side, were hoisted and ready to drop.

Everything being ready on shore and on board, the craft was quietly let "down stream" by her anchors until the engineer on shore signalled "in position." The flag was raised "all right," and with the order "cut away," the barrels floated up, the iron spods dropped, burying themselves in the river bed, and with a light shock the coffer dam rested securely on the bottom of the Niagara, on a deposit of gravel and stones. The gravel and stones have to be removed by a dredge, there ready for the purpose. Below the gravel the solid rock is found on which the piers are to rest.

Three divers from the new Blackfriars Bridge, London, are clearing away the obstructions around the shoeing. They now and then come in contact with pieces of wreck and sunken logs. Until the bridge is finished, the large steam ferry, near Buffalo, continues taking the trains across Lake Erie to the Canada landing.

#### THE AMANIANS.

The Amania Society is the name of a very flourishing community in Iowa, consisting of fifteen hundred members. They own everything in common, and present an admirable example of the success of the co-operative plan when intelligently administered. These people were formerly known as *Ebenezers*, and lived near Buffalo, N. Y., where they possessed six thousand acres of land. They sold out some fifteen years ago for the sum of five millions of dollars, and moved to Iowa. They are located near Homestead station on the Rock Island and Pacific Railroad, where they own thirty thousand acres of the choicest lands. They have seven distinct settlements, and their affairs are managed by fifteen trustees or fathers. The society is incorporated under State laws. At convenient distances in the settlements they have restaurants, to which the various families resort for food.

The Amanians cling to their good old German ways in dress and general habits, and are not in bondage to the outside world. All have an equal interest in the property; individuals are not allowed anything for their services, or furnished with money for their private use. Each settlement has a store, and all are allowed to draw a certain amount yearly from it for their private wants. A man with a family is allowed from \$50 to \$70, with \$20 for his wife and \$10 for each child. This is expected to keep them in clothing and household furniture and supply all their little personal needs. When persons find that the amount appropriated is not sufficient for their actual expenses, the matter can be laid before the Board of Trustees, who will exercise their judgment about making an additional appropriation.

They are a temperate, industrious, religious people, but it is difficult to define their theological views.

A leading principle of the society is that all will get along well together if every one will do right; and in this spirit, everything is managed harmoniously. There is no better theology than this, after all.

It is their custom to meet every day in small companies, about the settlement and in rooms provided for the purpose, to devote half an hour to religious exercises; on Wednesday they meet in the middle of the day; Sundays they all come together in their meeting house for religious services. They do not appear to specially favor marriage, and many of them are living single. When young people wish to marry, they generally receive the consent of the society if they have a reputation for good behavior. If the parties have not succeeded in commending themselves, they are not allowed to marry.

The society owns the whole settlement, and carries on all the business, including that of the lumber yard, store, hotel, etc. They hire considerably on the farm and in their factories, and claim that even in Iowa, with their 30,000 acres of choice land, farming operations do not pay. About three miles from Homestead, on the Des Moines river, they have a fine water power, flouring and woolen mills, and manufacture an extra quality of yarns and fine flannels in colors. The latter goods stand high in market, and are mostly bought up by a few first class retailers in the large cities. The Amanians have a high reputation for uprightness in all their dealings with the outside world, and are much respected.

[Special Correspondence of the Scientific American.]

#### LETTER FROM PROFESSOR R. H. THURSTON.

PITTSBURGH, Pa., July 2nd, 1872.

*Construction of Iron Bridges. Works of the Keystone Bridge Company. Manufacture of glass ware. New iron works. The coal and iron fields. The Siemens furnace.*

At the upper part of the city and near the bank of the Allegheny, are the works of the Keystone Bridge Company, where are made a large number of the finest bridges in the country, and where is now in progress the superstructure of the great St. Louis bridge over the Mississippi. About three hundred men are employed here, and an immense amount of bridge work is turned out. The character of the work done at this factory has secured for the firm a reputation that can hardly be affected by anything that we may say; they are everywhere known as the builders of one of the best forms of bridges in use, and as giving the best possible work.

Many tools in use here were designed especially for their work, and are remarkable both for their ingenuity of design and for their simplicity and effectiveness.

In all the bridges built by this company from their own designs, the bolts and links are "upset" at their ends to take the thread or to form the eye; and this work being done