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No. 552.

For the Week Ending July 31, 1886.

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NEW YORK ELECTRICAL SUBWAYS.

The Electrical Subway Commission, having decided that the best plan for putting the telegraph, telephone, and electric light wires underground in the city of New York consisted in a conduit of asphalt concrete, has now awarded the contract for its construction to the Consolidated Telegraph and Electrical Subway Company.

In no case are they to exceed the cost of keeping up the wires as at present, or ten per cent upon the capital invested in constructing and maintaining the conduits. The contract has been provisionally signed, and a bond of half a million dollars executed by the company as a guarantee of the faithful performance of its duties.

The work of constructing the conduits will be begun, probably, about the middle of August, and will proceed, it is stated, at the rate of 500 feet per day. The contracting company claims to own patent rights covering the manufacture of asphaltum-concrete conduits, as recommended by the Commission, to the number of twenty-one, and to control several others in addition.

It is hardly probable, however, that the work of putting the wires underground will be permitted to proceed without the interference of an unusually large number of injunctions and lawsuits. It is still an open question, in the first place, as to whether the Commission has the authority to make such a contract.

SHIP TRANSIT ACROSS THE ISTHMUS.

It is a fact so curious as to be worthy of remark that the canal projects of Panama and Nicaragua have, almost simultaneously, met with an ill-fortune which can scarcely help to weaken the confidence of the public in their practicability. At Panama, the \$120,000,000 that was to have been sufficient to pay for the construction of a tide-level canal having been expended, it was thought advisable by the promoters of the scheme to ask the French Chambers to inquire into the matter; to assure, at least, the French public that a canal at that point was feasible, and to sanction the raising by lottery or subscription of a like sum, which M. De Lesseps avers is necessary in order to surmount those unforeseen difficulties which usually present themselves in works of such magnitude.

Whatever may have prompted the committee to withhold its sanction to the new loan after a consideration of three months, it must be apparent even to the dullest intellect that the road to success in this enterprise is not clear, and the methods by which its promoters hope to attain it by no means certain.

As to the project for a lifting lock canal at Nicaragua, which has long found favor among American engineers, the recent earthquake in the vicinity of its route sweeps away in a moment a principal argument put forward in favor of its selection. Nicaragua, we have been told, is outside the zone of earthquakes, and hence that the great works necessary to such an elaboration of waterways would remain undisturbed from those violent upheavals which periodically visit the greater portion of the Central American main.

It is within the range of probability that De Lesseps may yet discover a means of raising another \$120,000,000 among his countrymen, whose faith in his ability is so abiding that even the grossest errors of calculation, the most evident misstatement of well known facts, and ideas as to financial management that would startle the most reckless stock-jobber, may not be relied upon to shake it.

Even if another \$120,000,000 should be put into the Panama Canal project, there is abundant evidence to prove that it would be insufficient. Eminent engineers, who have carefully examined the work already done and what remains, have estimated that the completion of such a canal at this point will require a gross expenditure of about \$500,000,000.

It is reported that M. De Lesseps recently told his countrymen that should they fail to support the Panama enterprise, it would be turned over to the Americans, who would eagerly put their dollars into it.

Those who are aware of the apathy with which the Panama scheme was received in this country at its inception will be slow to believe that now, when its earlier promises have proved so visionary, capital will be found here ready for investment in Panama Canal shares. The fact is that in this country the Eads Ship Railway across the Isthmus of Tehuantepec and the Nicaragua Ship Canal have long been the favorite

projects. Ever since President Cleveland spoke in favor of the ship railway, in his message to Congress, the current of opinion has turned in that direction, and now that the route of the proposed Nicaragua Canal has proved to lie within the earthquake belt, Eads' project is thought to be the only practicable one. The strongest point in its favor, and one which cannot fail to commend it in the eyes of practical men, is that its cost can be estimated with something like certainty; for railway construction has reached that point where material, cutting and filling, and labor can be computed in advance; and as to lifting ships out of the water, and their ability to bear the strain of transportation, no other means are required than those already in successful use in the dry dock and the marine railway. Best of all, the promoters of the ship railway ask not a dollar from the Government until they have shown in actual practice the capability of their construction to transport ships from ocean to ocean.

BASEBALL.

Probably there has never been an out of door amusement which has taken the whole country so by storm as baseball playing has done this season.

The skill exhibited by the experienced players has attracted crowds of people from long distances to witness match games, and the enthusiasm manifested on the field shows that it is not a mock interest or fashion that has brought them together, but that it is the skill of the players that attracts such fabulous numbers.

The knack of a skillful "pitcher," who sends his ball so that it diverges from a straight line after leaving his hand, and curves in any direction at the will of the pitcher, so as to deceive the "batter," is an attainment which but a comparatively few have reached, but it is a science which every amateur player would like to acquire.

In another column Mr. Chadwick, who probably understands the game of baseball as well as any writer on the subject, explains his theory of the curved ball, which so many have watched with interest and so few have attempted to explain. If any one can advance any better theory as to the way the ball is held or thrust from the hand, the editor will be glad to hear from him.

A New Ocean Telegraph Circuit.

At present, when telegraphic messages are sent from the United States to Brazil, they must first be cabled to Europe, and then sent from there to their destination. This is not only a very roundabout method, but also very expensive, each word costing \$2.06 for its transmission. A new enterprise has just been organized in New York for the construction of a direct cable from this port to Venezuela and Brazil. It is called, in honor of the Emperor, the Pedro Segundo American Telegraph and Cable Company, and starts out with a capital of \$2,500,000. The imperial government of Brazil and republic of Venezuela have both granted very favorable concessions to the new company. Its cable will be over four thousand miles long, and is being constructed in England. It will probably be completed in a few weeks, and will be laid as soon as the equinoctial storms are over. It can be put in place in three months, and it is thought will be ready for business before the end of the year. The cable will begin at Visau, on the coast of Brazil. It will touch at Cayenne, French Guiana, and will connect with the land lines of Venezuela at the mouth of the Orinoco River. The cable will then follow the coast, connecting with Caracas and other important points. From Venezuela it will be carried to Port au Prince, Hayti, now without cable connection, and thence directly to New York.

The Wreck of the Oregon.

Six divers are now constantly at work on the Oregon, steam pumps being used to supply them with air. Each man remains under water from a half hour to an hour at a time. By the end of that period, the pressure becomes difficult to bear. The air is forced through five-ply rubber hose, which it would be almost impossible to cut or break. The greater part of the cargo has now been removed. It consists largely of cotton goods. The divers, armed with hooks like the longshoremen, take hold of the bales, and transfer them to the steam pulleys by which they are hoisted on board the wrecking vessel. The average daily work accomplished is twenty bales. It is probable that the whole cargo will be removed within a few weeks. Most of the mail has also been recovered. We are still receiving magazines and other mail matter from the ill-fated vessel, but their long immersion in the sea has detracted considerably from their value. In order to get at the mail room, it was necessary to blow a hole in the side of the vessel with dynamite. Much of the mail, however, was utterly ruined before its recovery. The Oregon itself is rapidly going to pieces. Not only has she broken in two between the mainmast and the foremast, but her bow has already fallen over in the sand. The mainmast and mizzenmast are still visible above the water,

High Speed Ships.

It is curious, says *The Engineer*, that in all these discussions concerning marine high speeds, so little is said about the power and coal wasted by friction and badly made propellers. It has long been known that of every 1,000 indicated horse power developed in a steamer, not more than 450 to 500 are utilized in driving her. Here is an enormous margin which no one attacks, and yet events occur almost daily which show that something, much or little, might be done. Thus, for example, Mr. Nichol, one of the speakers in the discussion related an experience which he had had. A ship was built on the Tyne to go at 14 knots, with fifty-five revolutions per minute. The propeller was designed, and rejected as being too small, by the superintendent engineer to the company for which the ship was built. On the trial trip the engines would only make forty-nine revolutions per minute, when the bearings heated, and a very unsatisfactory voyage as to speed was made. The cause was sought for, and found in the undue proportions of the propeller. Ten inches were cut off the top of each blade, and the engines then made fifty-five revolutions without heating and with the most satisfactory results. In the case again of the steamship John O. Scott, the propeller was very heavy, and the consumption 15 tons a day. The propeller was reduced in diameter and area, and the ship then went at the same speed, making ten revolutions more per minute, and the consumption fell to 13 tons a day. There is, our readers may rest assured, no special isolated virtue resident in expansion, or high speed, or lightness, or forced draught. Each of these things has its advantages and disadvantages, and the skill of the engineer is shown, not by advocating any one of these as a panacea for all the ills ship owners are heirs to, but by so combining the best features of all that a satisfactory result may be reached; and the engineer ought to know that the value of the result will always be estimated by the ship owners in terms of pounds, shillings, and pence, and on no other basis.

Whale Hunting by Steam.

The Monterey Whaling Company is about the oldest institution of the kind on the coast, and the stock proves a very fair investment to the holders, who are the whale killers themselves. The business office, storeroom, and eating and sleeping apartments of the company are in a white adobe building in the western suburbs, and half a mile further south is a high cliff, whereon is the company's lookout. He is armed with a powerful glass, and a tall mast is rigged with halyards for hoisting a signal when game is sighted.

The hunting tools consist of three of the regulation double-pointed boats in use by whalers the world over, five long oars to each boat, 200 fathoms of line smoothly coiled in tubs in the bow, and two guns to each boat. The larger size of the two has the proportions of a young cannon, and is mounted on a pivot. The missile discharged from it is a steel bar four feet in length, and provided with a folding barb that opens out when the harpoon buries itself in the whale. This takes the place of the old-time harpoon, and is much more certain and effective. The lighter gun is fired from the shoulder, and looks like a large-sized fowling piece. It has a 1½ inch bore. It is used to put the finishing touches on the whale after the harpoon has made him fast, and the method is to fire an explosive bomb into a vital spot. The bomb is 1½ inches in diameter by 18 inches long, the butt end being winged with rubber tips, after the manner in which an arrow is feathered, to secure guiding power.

It was early morning when the white signal fluttered to the top of the staff of the mast on the cliff; and having previously obtained permission to join the hunt with Capt. Mariano, the quartermaster was speedily seated in the stern sheets, awaiting the signal to shove off. This was soon given, and six miles to the northwest the three boats came up with their game, which proved to be an unusually large specimen of the California gray variety. The gigantic fish rolled lazily about on top of the water, all unconscious of impending danger, and did not even deign to notice the approach of the boats that came upon either side and behind her. A hundred feet away the men lay on their oars, and Capt. Mariano sighted over his swivel gun. The men bent over their oars, with every muscle ready to pull or back water at the slightest hostile movement on the part of the enemy. It was a moment that seemed an age of awful suspense to the green hand, but suddenly the captain had a fair mark presented, and pressed the trigger. The boat quivered under the shock accompanying the report, and the eye could plainly catch the flash of the harpoon as it cleaved the air and buried itself out of sight somewhere in the right shoulder. Attached to the steel missile was the stout Manila line coiled in the bow, and it bore the appearance of a flash of brown lightning as it zigzagged through the air after its powerful motor.

The whale hardly seemed to comprehend the trouble that had overtaken her at first, and it was fully half a minute before she emitted an angry snort, and started

for the bottom at a rate that made the line smoke and emit sparks as it ran over the bows. Both the Captain and the boat steerer peered uneasily into the clear depths as the line stopped running out, and a minute later the former shouted: "Back all! Back hard!" The five ashen blades bent and quivered with the strain put on them, but it was none too much, as the boat was scarcely a dozen feet away when the huge bulk of the infuriated whale rose to the surface, and spouted twin columns of the brine high in the air. Before the animated waterspout could repeat the dose the boat was out of range, both of the fire extinguishing apparatus and the terrible flukes that soon commenced to thrash the water into foam. Her contortions were so violent that the captain could not get in a shot with his bomb gun, which he raised and lowered half a dozen times without pulling the trigger. Finally the flukes quit their thrashing, and like a flash the leviathan dashed away at a terrific rate, burying the boat's bow between two walls of water fully eighteen inches high, but the speed was such that scarcely a drop entered the boat. This gait was kept up for a good ten minutes, and then the speed commenced to slacken, and the wounded monster swam easily and quietly on top of the water.

The living tug came to a total standstill at last, and, pulling around to a broadside position, the captain was given his opportunity. The second explosion was followed by the whistling of the rubber-winged bomb, which buried itself in the great mass of blubber. Scarcely had the smoke cleared away from the bow before the muffled boom of the bomb exploding in the historical residence of Jonah sounded the death knell of the poor old whale. The victim's huge bulk grew animated again, but only for a moment. The flukes thrashed violently for a few seconds, while the waterspouts became tinged a warm red. Struggles and spouts became more and more contracted, until, with a last final effort, the inwardly wounded monster rolled over and expired. The other boats made fast, and a hard pull of three hours landed the prize on the beach, where it is to be cut up.—*Alta*.

Cork.

In his recent lecture on "Cork," Mr. W. Anderson said: "In this strong upright glass tube I have, at the top, a piece of India rubber, immediately below it a piece of wood, and below that a cork; the wood and the cork are loaded with metal sinkers to reduce their buoyancy. The tube is full of water, and is connected to a force pump by means of which I can impose a pressure of over 1,000 pounds per square inch. The image of the tube is now thrown on the screen, and the pressure is being applied. You see at once the cork is beginning to shrink in all directions, and now its volume is so reduced that it is incapable of floating, and sinks down to the bottom of the tube. The India rubber is absolutely unaffected. The wood does contract a little, but not sufficiently to be visible to you or to cause it to sink. I open a stop cock, and relieve the pressure; you see that the cork instantly expands, its buoyancy is restored, and it floats again. By alternately applying and taking off the pressure, I can produce the familiar effect so well known in the toy called the 'bottle imps.' It is this singular property which gives to cork its value as a means of closing the mouths of bottles. Its elasticity has not only a very considerable range, but it is very persistent. Thus in the better kind of corks used in bottling champagne and other effervescing wines, you are all familiar with the extent to which the corks expand the instant they escape from the bottles. I have measured this expansion, and find it to amount to an increase of volume of 75 per cent, even after the corks have been kept in a state of compression in the bottles for ten years. If the cork is steeped in hot water, the volume continues to increase till it attains nearly three times that which it occupied in the neck of the bottle."

The Race of the Steam Yachts.

On July 15, the American Club races came off over the 90 mile course on Long Island Sound, between Larchmont and New London. The very unfavorable weather of the previous evening made the number of attendant yachts much smaller than usual, but otherwise the race was a complete success. In the first class only two yachts were entered, the *Atalanta* and the *Yosemite*. The best time was made by the *Atalanta*, which steamed over the course at an average speed of 19.64 miles an hour. This gives her the custody of the Commodore's Cup for another year. She would also be entitled to the class prize, but the rules of the club provide that only one prize can be taken by any yacht. Consequently the *Atalanta* has her choice of prizes, the *Yosemite* taking the second. In the second class the *Lagonda* was the victor, and in the third the *Nereid*. The principal feature of this year's race was the remarkable performance of the steam launch *Henrietta*, which has been recently built by the Messrs. Herreshoff for Mr. Norman L. Munro. The vessel has only a length of 46 feet 7 inches on the water line. She was not entered for

the race, but started out from Larchmont with the yachts of the second class. Before the course was half covered, she was out of sight. Her average speed was 16.75 miles an hour.

Tea Drinkers' Diseases.

It is not a little curious that the diseases arising from the wrong use of tea should be met with in greater frequency in countries foreign to its growth. It might have been supposed that where production went on, there would be found those evils that attend the consumption of tea in their greatest extent; but such does not appear to be the case. The diseases due to tea are well known to doctors, but the public seem to be strangely indifferent to the teachings of their medical advisers in these matters. Recently, in France, M. Eloy has reminded medical men how vast is the number of diseases owing an allegiance to the dominion of Queen Tea. The list of headings in M. Eloy's paper is well calculated to arouse attention, and, we hope, to lead to some abatement of this widespread disorder. America and England are the two countries that are afflicted most with the maladies arising from the excessive consumption of tea. Individuals may suffer in a variety of ways. It is customary to speak of acute, subacute, and chronic "theism"—a form that has no connection with theological matters. It is possible to be a "theic" by profession or a "theic" by passion. The predominance of nervous symptoms is a characteristic of theism; general excitation of the functions of the nervous system may be observed; or the weakness may be noted more especially in the brain as distinguished from the spinal cord. Perversion of the sense of hearing is not at all an uncommon symptom—patients hearing voices that have no real or objective existence. The irritability that overtakes women so frequently may sometimes be clearly traced to an excessive indulgence in afternoon tea. It is a mistake to suppose that it is the poor seamstress who is the chief sufferer from theism. No doubt the tannin which tea that has been standing long contains does a great amount of mischief, but the derangement that it causes hardly belongs to that class of diseases with which we are at present concerned. Rather does theism belong to that genus of disease in which morphinism, caffeism, and vanillism are found. The habit of tea drinking is one that grows on its victims like the similar ones of opium or alcohol. Taken in strict moderation, and with due precautions in the mode of preparation, tea is, like alcohol, a valuable stimulant; in its abuse there is also a certain analogy. There is hardly a morbid symptom which may not be traceable to tea as its cause. This is a fact that general practitioners often use to their own satisfaction and to their patient's advantage, if it happen to be that kind of patient who does not object to make some sacrifice in order to be rid of troubles.—*Lancet*.

Struck by a Meteor.

A correspondent writes: "As a gentleman, a well known public official, was passing from St. James's Park into Pall Mall by the garden wall of Marlborough House, recently, at a quarter to 5 in the afternoon, he suddenly received on the right shoulder a violent blow, accompanied by a loud crackling noise, which caused him great pain and to stumble forward as he walked. On recovering his footing, and turning round to see who had so unceremoniously struck him, he found that there was no one on the pavement but himself and the policeman on duty at the park end of it. On reaching home the shoulder was submitted to examination, but nothing was at first discovered to account for the pain in it. But in a little while the servant who had taken away the coat to brush brought it back to point out that over the right shoulder the nap was pressed down flat in a long, straight line, exactly as if a hot wire had been sharply drawn across the cloth. The accident is therefore explained as having been caused by the explosion of a minute falling star or meteor. It is an unprecedented and most interesting occurrence, and deserves, I think, to be placed on public record."—*London Times*.

Ingenious Petty Swindlers.

The ingenious ways some persons adopt to avoid paying out their money seem incredible to those whose walks in life do not bring them in contact with large numbers of people. "Here is the latest (from the *Railway Review*) to beat us poor conductors out of our fare," said one of the fraternity the other day. "While taking up the tickets, I reached a nicely dressed lady, who was looking, apparently preoccupied, out of the open car window and tapping her pocketbook on the window ledge. I touched her shoulder to attract her attention, when she jumped as though shot, and dropped her pocketbook out of the car window. She began to cry, and what could I do? Pass her, of course, which I did. I noted the place of the accident, stopped for the pocketbook the next trip, and found its contents to be a postage stamp and a card of hooks and eyes. I felt pretty cheap then."