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New Machinery for Paying Out the Atlantic Telegraph Cable—Who is the Inventor?

The principal feature in which the machinery to be employed in the next attempt to lay the Atlantic telegraph cable differs from that employed in the unsuccessful attempt of last summer, consists in certain contrivances by which the velocity of the paying-out of the cable is controlled, to a great extent, by the degree of tension on the cable itself, thus preventing the possibility of any such excessive strain upon it as would be liable to produce a rupture. This is obviously a great improvement upon the old apparatus, which was entirely at the mercy of the brakesman, to whose carelessness or stupidity the failure of the last expedition has been generally attributed.

The English newspapers recently received here contain programmes of the next expedition, with descriptions—though not of the most intelligible character—of the apparatus, an important part of which is that to compensate immediately for any sudden increase of strain caused by the pitching of the ship, or by suddenly arriving at an increased depth of ocean. We give a description of this from the London *Daily News* of April 24:—

"The cable, after passing four times round each of the wheels of the paying-out apparatus, passes under a grooved wheel of pulley, the axis of which is attached to a weighted rod working in a piston. This grooved wheel is so arranged that it can rise or fall in a framework, according as the tension of the cable which runs under its circumference, and over another fixed pulley, by which it passes out of the ship, is greater or less than the weight of the pulley and its weighted rod."

We are not told to whom the credit of the invention of this portion of the machinery belongs, but great credit is given to Mr. Bright, the engineer of the Telegraph Company, and to Mr. Everett, the chief engineer of the U. S. steam frigate *Niagara*, for having overcome the numerous mechanical difficulties. The invention, however, in our judgment, really belongs to H. Berdan, of this city, by whom a patent has been secured in England, specifying it, together with other contrivances in connection with it, by which the operation of paying out is entirely controlled by the degree of tension on the cable, instead of only partially, as is the case in the machinery now being put on board the *Niagara* and *Agamemnon*. The arrangement of the grooved pulley in the apparatus above described, it may be stated, differs from that proposed by Mr. Berdan in its working vertically instead of horizontally, but no change of action is involved in such change, which simply consists in placing the framework upright instead of laying it down upon the deck.

Drawings and specifications, together with a working model of his apparatus which had been exhibited by Mr. Berdan in this city, were taken to England by Mr. Everett and Mr. C. W. Field when they last left New York, and as the original drawings of the apparatus were made in our office, and the model was carefully examined by us, we are enabled to state without hesitation that those drawings, specifications and model represented the only important feature of the apparatus mentioned in the above extract.

We sincerely regret that any disposition should appear to be manifested on the part of those having control of this great enterprise in which two great nations are so nobly engaged, to appropriate for the accomplishment of their object what seems justly to belong to another; and, indeed, we wonder that pains should not have been taken to acknowledge with gratitude every effort or suggestion of any value to aid them from whatever source; and we hope that the Company will be able to give some satisfactory explanation for employing, without credit to him, this portion of Mr. Berdan's patented apparatus.

The Horse Taming Secret Again.—Another Theory.

We have already given our readers two theories for subduing wild and vicious horses. One system was founded upon Faucher's published experience in horse training, and assumes that the horse's kindness and affection could be conciliated to such a degree, through the gratification of the sense of taste and smell, as to make him more susceptible to the trainer's teachings; while the other advocated the opposite system of force, and asserted that you must in a positive manner show the animal you are his superior and master. It advocated the tying the animal's fore leg in an unnatural position, exhausting his strength and patience by torture, and virtually throwing him to the earth—a slight variation of a brutal course of treatment that has been tried from time immemorial without any beneficial effect.

We now have another theory on the subject; and as its trial cannot, under any circumstances, do injury to the noble animal it is intended to render submissive, we would advise those of our readers who feel an interest in horse taming to put it to the test, being careful to observe our former advice in practicing a gentle and kind course of treatment in connection with it.

This new system of taming is founded on the well-known process employed in subduing buffalo calves and wild horses taken by the lasso, and consists in simply gradually advancing toward the horse to be subdued, until you are able to place your hand on the animal's nose and over his eyes, and then to breathe strongly and gently, as judgment may dictate, into the nostrils. We have the authority of Catlin, in his "Letters and Notes on the American Indians," that this process is the one practised by the Indians in taming the wild horses of the prairies, and that it is invariably attended with success. It is mentioned by him that it is breathing, not blowing, into the nostrils that is to be performed, and that it ought to be continued some time to ensure success.

Speaking of the astonishing power thus exercised over wild animals, Catlin says:—

"I have often, in concurrence with a known custom of the country, held my hands over the eyes of a buffalo calf, and breathed a few strong breaths into his nostrils, after which I have, with my traveling companions, rode several miles into our encampment, with the little prisoner busily following the heels of my horse the whole way, as closely and affectionately as its instinct would attach it to its dam. This is one of the most extraordinary things I have witnessed since I came into this wild country; and although I had often heard of it, and felt unable exactly to believe it, I am now willing to bear testimony to the fact, from the numerous instances which I have witnessed, since I came into the country."

Mr. Catlin further states that the wild horse of the prairie is made docile and tractable by the same simple, kind, and singular treatment.

While upon this subject we may observe that the last accounts from Europe represent Mr. Rarey as realizing a splendid fortune there by imparting the secret of his peculiar art. He has publicly stated that the system of force exhibited at Astley's Circus, and alleged to be substantially the same as his own, and referred to in our last issue, is directly opposite the process he practises; and he authorizes the Messrs. Tattersalls to pay to any person other than his own pupils, who will subdue wild and vicious horses as successfully as by his method, the sum of one thousand guineas. Mr. Rarey does not mind acknowledging in public that the key to the art of horse-taming is a process of alchemy, however close he may keep the other portion of his secret.

New Side Screw Propeller.

A new steamboat, named the *Charlotte Vanderbilt*, has been built in this city, for the purpose of carrying out Captain Whittaker's method of propulsion, illustrated on page 188, Vol. XI., SCIENTIFIC AMERICAN. But although it should have been running on the North river long before this, it has not made its trial trip yet, and the inventor objects to her being allowed to run, on account of some new untried valve gear having been put on against his wishes. It is a handsome steamboat, and has a number of peculiarities. Its length is 210 feet, bow very sharp, with fine water lines; it has considerable breadth amidships to give stability in the water, as its draft is very light, being less than three feet at the bow. The interior of the hull, under the lower deck, is divided into sixteen wrought iron water-tight compartments or cells. It was built for great speed to run between New York and Albany as a day boat, to make as good time as the railroad; and it is, in fact, a locomotive steamer in regard to her engines. She has a screw propeller at each side, in place of paddle wheels, and each propeller shaft is driven direct by two locomotive oscillating cylinders. The screws are fourteen feet in diameter, and have twenty-five feet pitch. The cylinders are two feet bore and two feet stroke, and it was designed that their valves should be worked by eccentrics from the propeller shaft, with the old and well tried link motion. Instead of this, the valves are arranged to be operated by a bell crank arrangement attached to the piston rod, an untried method. We should really like to see this method of propulsion fairly tested in our waters, as it is said to be very successful on Lake Erie, and if so, its economy in room for machinery and first cost is very great. The engines and boilers only weigh forty-five tuns, and occupy a very small space. They are intended to do as much work as common steamboat engines and boilers of two and three hundred tuns weight.

It was calculated that the screws would make one hundred and twenty-five revolutions per minute, with the steam in the boilers at 100 lbs. pressure. At this rate, the *Charlotte Vanderbilt* would attain to a speed of about thirty miles per hour, allowing fifteen per cent for slip. Thus, $125 \times 25 \div 88 = 35.51 - 5.32 = 30.19$ miles per hour, a most extraordinary speed for a steamboat.

A Preventive to Potato Rot.

Since the dreadful blight to the potato crop of Ireland some years ago, when the entailed consequence of famine almost decimated the population of that unhappy land, agriculturists, agricultural chemists, and scientific gentlemen of all countries, have experimented upon this favorite and important esculent, with a view of ascertaining the causes, and preventing the ravages, of the potato rot. Numerous theories of its causes have been advanced, and any number of remedies proposed; but it would appear that, beyond the improvements in the selection of the seed, the cultivation of the vine, and the gathering and preserving the potato with increased care and skill, but slight benefit toward the great end sought has been derived from these sources. What the most distinguished agriculturists and *savans* of the world have failed to accomplish by the most intense thought and experiment, has, it appears, been effected, like the development of numerous facts in mechanics and science, by accident; or rather, such an effect was produced from this cause as set science to work in the solution of the problem, and to give it a practical tendency.

A few years ago, the English papers published a statement that some boys in Belgium, for amusement, inserted peas in seed potatoes which they were planting, and that in due time both peas and potatoes grew together, producing an unusual yield of peas. These were gathered, and the potatoes were allowed to ripen, and upon digging proved to be entirely sound, while the same sort, in other parts of the field, were badly rotten. This fact coming to the knowledge of Mr. J. Jackson, of Leeds, England, prompted him to submit a series of samples of diseased and sound potatoes to careful chemical analysis, and he invariably found that the diseased potatoes, as compared with the healthy ones, exhibited a marked deficiency of nitrogen and of nitrogenized matter in every instance, and also a great deficiency, as compared to the published analysis of the potato, by Liebig and others, made some years before. "From that result," says Mr. Jackson, in his published report, "I inferred that the potato being inherently deficient in nitrogen, if it were inoculated with a substance intrinsically rich in that element, as peas are, during the mutual decomposition and chemical changes of the substances of both plants, in the process of their germination and growth, a sufficient evolution of nitrogen from the pea would take place, and be absorbed by combining with and supplying the deficiency of that element in the potato, and thus communicate, as it were, its equivalent in that way, and counteract its tendency to disease."

Mr. Jackson then tried the experiment practically, by procuring several kinds of potatoes for sets whole, and inserting four or five peas (according to the size of the potato) deep into the fleshy part of the set, taking care to avoid the eye, and planting them in the usual way. The result was perfect success, with an extraordinary yield of both peas and potatoes, the latter being, almost invariably, large and healthy, and free from every trace of disease. These potatoes were laid on a wooden floor in a house, where they remained all winter, and in the following spring they were found to be all sound and healthy, and were employed as sets again in the same way, with the same result.

The Infected Ship.

In answer to a call we made upon our correspondents in No. 35 of the present volume, for some cheap and practical means which would disinfect the United States steam frigate *Susquehanna*, we have received many suggestions, and among the most original we select the following:—

First—It is proposed that the authorities procure five hundred bushels of oyster shell lime, fresh and warm from the kilns, and distribute it through the hold, and between her decks; then close her hatches, and allow the lime to become air-slacked, and the gas *emitted* to penetrate the ship. This, we fear, would not answer, as the only action that we could depend upon in the lime would be the absorption of all carbonic acid and moisture that may be in the atmosphere, as in slacked lime there is no gas emitted.

Second—It having been observed in Cornish mines that water was frozen at the bottom of the air pipe, it is suggested that similar means be used in freezing out "yellow Jack." The apparatus consists of an engine and compression air pumps at the mouth, and a long air pipe leading to an engine at the bottom. The air pumps in question were supplied with a small stream of water to prevent leakage, the heat resulting from the compression was so great as to convert a part into steam; but before the air reached the lower engine it was cooled still under pressure to the temperature of the atmosphere in the mine. When the air was released from pressure at the exhaust of the lower engine, the water was discharged as ice. By means of a few hundred feet of gas pipe and a weighted valve, air with water could be forced into the ship, and taking advantage of the observation described, "yellow Jack" would be frozen out. This, we think, is an admirable proposition, and worthy the attention of the authorities.

Third—A gentleman sends us the prospectus of Hellard's Concentrated Gaseous Chlorid, which, he asserts, is a most powerful disinfectant; but as he has not given us its composition, and as also he is in communication with the authorities, we can only notice the communication thus briefly.

There is still one more plan that we must notice one—one that comes from the assignee of Schooby's patent for producing currents of cold air. He proposes to cause air to pass through a mixture of ice and salt into the hold of the ship, the draft being created by the coldness, and a long chimney at the other end of the ship. It would require a fan blast or some other means of drawing this cold air through the ship, as it would never bring about sufficient ventilation by its mere lowness of temperature.