

Miscellaneous.

The Pulley and the Crank.

Our readers will remember the controversial articles which appeared in our columns, respecting the merits of the Pulley and the crank. The following challenge, the greatest we believe that has ever been brought before the mechanical world, has resulted from it. If this challenge is accepted, it will create more excitement than any other, not excepting the war in Hungary, which has taken place during the last ten years.

UTICA, N. Y., Jan. 28, 1850.

CHAS. GRENNEL Esq.:—Dr. Sir,—I have perused your communication, published in the last No. of the "Scientific American," on the "dead power points;" and I must say that I cannot agree with you in opinion, that the crank is the *ne plus ultra* in its way, of mechanical ingenuity." On the contrary, I believe the Crank to be an inefficient and wasteful contrivance for converting the reciprocating motion of the piston into a rotary motion of the propelling shaft. With these opposite views respecting the economy and efficiency of the Crank as used in our steam engines, I propose a mode of settling the question between us in the only manner in which it can be satisfactorily demonstrated. That way is this:—To have two boats, (of about 6 or 8 tons each) of the same size and exactly alike, with paddle wheels and boilers of exactly the same size for each boat, and precisely alike. Then two engines, (of 6 or 8-horse power, each); one for each boat, with cylinders of the same diameter, and every other part of the engines of the same size and precisely alike, except that one shall be the common and usual crank engine, new and good and perfect in all its working parts; and the other engine have no crank, but a pulley or pulleys instead thereof. That then you, or some friend for you, to have the exclusive and sole management of the boat with the crank engine, and myself, or some friend for me, of the other boat and engine,—and both boats to run in the same water, at the same time, and with the same equal pressure and quantity of steam. That boat which in running 8 miles, with the same pressure and quantity of steam, shall be ahead, to be regarded as having the most economical and efficient engine. I have had two such boats and engines built during the last season in New York, at a cost of over \$4,000. I have heretofore endeavored to convince you and others by argument, through the columns of the papers of the day, that the crank is a "bungling inefficient and wasteful contrivance," and failed to produce conviction. I am compelled now to resort to another argument—the argument of fools, it is said—to produce conviction.

I will bet both boats, boilers and engines, against \$2,000, (less than half they cost me,) that the boat having the pulley engine, and no crank at all, will beat the boat with the crank engine, a mile in eight—that is, run 9 miles to the latter eight—with the same pressure and equal quantity of steam, and the boats (including draft and displacement of water) boilers, paddle wheels, &c., precisely alike, and the cylinders the same bore. The pulley engine winning that bet, I will give you the option to repeat the bet, upon the gain of a mile in 7. Then a mile in 6; then a mile in 5, and so on until the crank wins a bet. After the second bet won by the pulley, I will, if desired, upon the expense thereof being paid, shift the engines—placing the pulley engine upon the crank boat, and vice versa; and will also, from the start, and at all times, give full permission to increase or diminish the size of the paddle wheels of the crank engine boat—and alter the engine (being responsible to me for real damage only to the engine) in any manner you please, or to substitute an entire new engine, at your own expense, (keeping the bore of the cylinder the same) to suit yourself. Can anything be more fair? If the crank engine loses nothing, as you think, then, sure y, the Pulley engine can gain nothing; much less a mile in 8. If you are not disposed to "back" your opinion in this way, (you must see from

the character of my proposition that it is public conviction, and not the money alone or chiefly I seek). You have my consent to communicate this offer to any and every person whom you think may be inclined to accept it. The time and place for the trial to be the first Monday of May next, at New York. If you, or any friend of yours, desire to accept this offer, please address me here, (Utica, N. Y.,) accordingly without delay, and forward this letter with an endorsement on the back thereof—Offer accepted, and signed with your name, together with the money to some friend of yours in New York, to meet a friend of mine at the office of Hon. Horace Greeley, of the Tribune, on the first Monday of April next, at 11 A. M., to deposit this offer and your acceptance, and the money, and my Bill of Sale to you of the boats, boilers and engines, with him as stake-holder. Or, if you prefer E. K. Collins, Esq., Agent of the Ocean Steam Navigation Co., New York.

For your gratification, or information, I would state that I reside at Milwaukee, Wis.; and that I am neither an Engine-builder, engineer, or mechanic, but a lawyer by profession, and inventor of the "Pulley Engine."

Very respectfully, &c.,

PETER YATES, (Pulley).

MARION, Perry Co., Alabama, }
February 8, 1850. }

PETER YATES, Esq.—Dr. Sir,—Your communication of the 28th ult. came to hand by yesterday's mail. In answer to which, permit me to say that I have no objections to "back" my opinions in the manner proposed by you, if no other than a "fool's argument" will suffice to convince you of your error. But being the challenged party, I certainly have the right to choose my own ground, as well as suggest the manner in which the subject at issue shall be "satisfactorily demonstrated." My objection to the arrangements proposed by you, are these: First. Your boats have been constructed under your exclusive direction and supervision, solely it appears, for experimental purposes—for which, as well as for practical ends, they are entirely too small, and the data to be elicited from an experiment with them, could not safely be relied upon as a foundation for any great practical results. Every man of science is aware that there are many machines which work well in model, that are entirely inapplicable to purposes of practical utility; thus successfully illustrating that man's skill is limited, even in the application of the simple laws of mechanics. And again, if I were to win your boats, they would be of no practical use to me whatever, and I doubt very much if I could sell them in New York, for even one-fourth of their original cost.

Now, that a contest of this nature may result in some pecuniary benefit to the successful party, as well as practically illustrate to the scientific world, the comparative merits of Cranks and Pulleys, I most respectfully ask leave to suggest the following proposition, viz: That we deposit in the hands of Messrs. Munn & Co., of the Scientific American, the sum of \$30,000 each, authorizing and empowering the said Munn & Co. to contract for, and superintend the building of two large boats, suitable for the conveyance of passengers and freight, adapted to the Lake trade between Mobile and New Orleans. That they be built to the same model, precisely, and furnished with low pressure engines, perfectly alike in every respect, save the Crank and Pulley connections of the piston with the shaft. That they be freighted at New York with two-thirds at least of their entire tonnage, and working under a pressure of steam not to exceed a given quantity, to run at some future day from New York to Mobile. The fixing of said day, the amount of pressure of steam to be applied, &c., &c., including all other preliminaries, to be arranged and decided upon by said Munn & Co. On the arrival of the boats at Mobile, the said Munn & Co. their Agent, or attorney, to transfer to the successful party the sole and exclusive right in and to said boats, their engines, and appurtenances.

Thus will the question have been satisfactorily, as well as practically demonstrated. The boats on their arrival at Mobile, will then be

in a situation where they can be used to great pecuniary advantage, in plying between the two cities above mentioned, or be sold, if desired for cash, for more than one-third advance on their original cost. The freight and passage money from New York, would enable the successful party, after paying insurance and other incidental expenses, fully to remunerate the said Munn & Co. their agents, or attorneys, for their services in the premises. The faithful performance of which last condition, I insist shall constitute a preliminary arrangement of the contest. You will therefore, be pleased, upon the reception of this, (a copy of which, with your letter, I have this day forwarded to Messrs. Munn & Co., trusting in their co-operation,) to deposit in the hands of the above named gentlemen the sum of \$30,000, together with a power of attorney directed to them, embracing in full, and in every particular, the above conditions. Whereupon the said Munn & Co. are requested to notify me forthwith of the fact, when I will likewise comply by forwarding my check immediately, accompanied with a like power of attorney. All further preliminaries, conditions, and arrangements to be submitted to the sole control and management of said Munn & Co. I respectfully ask leave however, to suggest, that the following arrangements be included, viz:—The said boats to be named and called after their respective engines—The Crank, and The Pulley. That you shall be the Commander or Director of the Pulley, and that I shall be the Commander or Director of the Crank. That upon the Pulley shall be deposited an extra crank, and on the Crank shall be deposited an extra pulley. That in the event the Pulley should get behind, and be in danger of swamping, that I shall have the privilege of insisting upon the attachment of the crank. And in the event the Crank should get behind, and be in a similar predicament, then you shall have the privilege of insisting upon the attachment of the pulley. And in order, the better to carry out those arrangements, I further propose: That upon the departure of said boats from New York, six disinterested persons shall be selected from the passengers of said boats, i. e. 3 from those of the Crank, and 3 from those of the Pulley, who shall be sworn to act impartially, and be fully authorized that in the event either boat shall be left so far behind in the race, as to lose sight of the other, to declare the contest in favor of the foremost boat.—Whereupon the successful boat shall have the power to return to her companion in distress, and the committees aforesaid proceed to attach the crank, or the pulley, as the case may be. This arrangement I consider of vast importance, since, on the safe delivery of both boats at Mobile, will depend the beauty and interest of the adventure.

If you decline acceding to the propositions herein set forth, or fail to comply therewith, within 15 days from the reception hereof, then you shall be considered as having "backed-out" and fully conceded the point at issue.

And now permit me in conclusion to assure you, that it will be useless to multiply words, or propose other conditions for settling this matter, than those herein suggested. I will consent to no other. The results of such an experiment would be final and conclusive, of some interest to ourselves pecuniarily, and to the world scientifically. The ocean has now become the great theatre for the exploits of steam. Let the test be made upon its waters, or not at all. It is the only field upon which great and important improvements in steam navigation, can be successfully introduced to the world. Establish the supremacy of the Pulley over the Crank on that field, and your fortune and fame are secure, otherwise you are destined to the shades of an impenetrable oblivion. In return for the information relative to yourself, I will state that I am neither an Engine-builder, Engineer, Mechanic, or Lawyer, but an amateur of the arts and sciences, generally, and one of the editors of the "Alabama Commonwealth," the first No. of which will not appear till the 1st of next month, and is therefore as little known as your "Pulley Engine."

Very Respectfully &c.

CHARLES GRENNEL.

Celtiberian Relics.

The French papers report a discovery in Ormoy, in the department of the Oise, of interest to the antiquary. A piece of ground covered with large stones—apparently the remains of a mound or altar—was recently purchased by a M. Renard, who commenced the removal of the stones. One of the largest he was obliged to blow up with gunpowder; when the entrance to a solidly constructed vault was laid open, and within two skeletons were found dressed from head to foot in bronze armour—with conical helmet and round buckler ornamented in the centre with a knob incrustated in gold, and wearing belts ornamented with silver plates. The quivers and lances were in bronze, like the armor. Near the stone which served as pillows to the heads of the skeletons were found six large vases of black earth, decorated with curious mythological figures (but what system of mythology they belong to, we have not seen stated) painted in white and sky blue. The largest of these vases is about 18 inches in height; the smallest contained a thin gold leaf, on which were traced about 150 small characters that are said to resemble the inscriptions found on the Celtiberian medals—which is natural enough. The inner walls of the vault were covered with traces of paintings—such as are still seen in Egyptian tombs—of a banquet, and of warriors, both horse and foot. On the roof has been painted the sun's disc, adorned with wings. These interesting relics, it is said will be presented to the Museums of Paris and Amiens.

Counterfeit Detector.

Our readers will notice in another column the advertisement of H. C. Foote's Universal Counterfeit Bank Note Detector. We have examined the system and have no hesitation in stating that it will do more than all others now in use, towards ridding the country of counterfeit notes. The instructions which accompany the magnifying glass, will enable a person with very little trouble, to determine between good and bad notes. We notice among those who have recommended the system, the names of F. W. Edmonds, Esq., Cashier of the Mechanics Bank, N. Y.; E. H. Arthur, Esq., of the Union Bank; C. S. Sloan, Broker, Wall street, and many other prominent money dealers. From what we can learn we should think it a subject of universal interest.

Paine's Light.

Persons applying to us for information regarding Mr. Paine's Electric Light, will please bear in mind that, as soon as the inventor is ready to reveal its nature to the world, it will be sure to find a place in the Scientific American.

We are daily receiving newspapers with "please exchange" marked upon them. We should gladly accommodate all our contemporaries in this way, but our exchange list is already larger than we care to have it, and new applications must be disregarded, unless the publishers insert our prospectus. All newspapers containing this prospectus will be entitled to the Scientific American, through this Volume, without sending their paper, and we should be sorry to know that we had overlooked any in this respect.

Miss Mary Pace, aged 12 years, a scholar in the M. E. Sabbath School in Corning, recited, from memory, a few Sundays since 4,000 verses from the New Testament—all of which she committed to memory in one week.

[The above is from a religious exchange.—It must have made a mistake in one 0. But 400 verses are too much for a child to learn in one week. We believe it to be sinful to strain the memory of the young.

The attendance, in the schools in the city of New York, is larger this year than ever before, and an excellent spirit prevails among persons interested in promoting the causes of education.

It is said that the speed of swallows, when emigrating, is not less than fifty miles an hour; so that when aided by the wind, they soon reach warmer latitudes. It has also been calculated that the swallow can fly at the rate of ninety-two miles an hour, and that of hawks and several other tribes to be one hundred and fifty miles an hour.