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Screw and Paddle Wheels Combined.

J. Bourne, C. E., the well-known author of a number of works on practical engineering, has published a long and able article, in the 'London Artizan," on propelling steam ships by the conjoint action of paddles and screw. He states that the best old steamships of the Peninsular Steam Packet Company were constructed under his direction, but they have become old, and having no interest in the Company now, the new steamships built since then, are worse than the oldest. The new vessels being slower than the old ones, general dissatisfaction has been manifested. To increase the speed of the old vessels, as it was impossible to sell them in order to get others of greater power, he, some years ago, recommended that one of the small ships ot the company should be fitted with a screw at the stern, and a pair of extra engines of 140 horse-power to drive it, as auxiliary to the paddles and the engines which she had; the screw engines were to have no air-pumps or condensers; they were to have high pressure cylinders, from which the steam was to pass, when cut off, into the old large cylinders, and there work expansively, and then be condensed; this involved no increased consumption of fuel, and if the power was thus doubled, the speed would be increased in the proportion of the cube root of 1 to the cube root of 2—an increase from 10 knots per hour to 12½, with a duplicature ot power. His suggestions, after great vacillation and delay, were neglected. Since then a rival company has started, which has cut down the profits of carrying the mails, and an increased speed has to be maintained at the expense of an increased quantity of fuel. It is to save expense in fuel, and yet increase the power, that he suggests the propriety and utility of employing both paddles and screw in one steamer. The idea is a good one for adding auxiliary power in an old vessel, and strange enough, both paddles and screw are represented in the figure of John Fitch's old steamboat, which he exhibited on Collect Pond, in 1796, in this city, the place where the "Tombs" now stand. Mr. Bourne contends that a steamship, with a pair of paddle engines of 500 horse-power, and a pair of screw engines of 500 horse-power, would be more efficient when deeply laden, than the same vessel with 1000 horse-power engines driving paddle wheels alone, and that it would be more efficient in head winds, than if driven by the screw alone and 1000 horse power engines. If either the screw or the paddles were deranged, the vessel would still be able to proceed with the remaining power. He has a high opinion of this plan, but only recommends it to increase the speed of existing vessels, not for new steamships.

At a meeting ot the Eastern Steam Navigation Co., held in London on the 12th ultimo, a most ponderous scheme was proposed; it is no less than a line of huge steamships to run from England around the Cape of Good Hope to Calcutta. These ships are to be of such a size that they will carry 3,000 to 4,000 tons of coal, and run at the rate of 16 knots an hour, to make the passage in 30 days. They are not to stop for coal on the way, but make one long bold stretch from the west of Europe to the east of Asia, and vice versa. It is a settled matter, by experiment, that the speed attainable by large vessels is greater in proportion to their power than with smaller vessels. These steamships are to be constructed principally of iron, and to be propelled by paddles and screw together,—thus carrying out the proposition first made by Bourne. At that meeting Scott Russell was present, and stated that there were steamboats now running between England and Ireland, which made 18 miles per hour, and he had built one of twelve times the length of her breadth, which ran at the rate of 18½ miles per hour. The changes which may be brought about in ocean steam navigation by the combination of screw and paddle, have yet to be demonstrated; the reasoning upon the proposed changes is good but experience is the only test of economy. One thing is certain, the great length of American River steamboats in proportion to their breadth, has afforded an instructive lesson to British ship builders, especially Scott Russell.

Manufacture of Gold Pens.

We have made a few remarks on several occasions about the manufacture of gold pens, and had we nothing new to say just now, we should not utter a single word upon the subject, but having witnessed the operations of some new machines, a few days ago, in the manufactory of A. Morton & Co., No. 25 Maiden Lane, this city, we took the opportunity of examining into the whole of the operations, and acquiring new information respecting many things unknown to the world at large. The gold for pens is rolled into thin strips, about the thirty-second part of an inch in thickness; in this state it is black on the surface, and looks like brass; the first operation is cutting it into stubs—short pieces pointed and angular at one end, and cut square off at the other; this is done in a die. The stubs are then run through a machine, and each point is indented for the reception of the real pen points. The next operation is pointing the stubs; the substance used for points is rhodium, a hard brittle metal like steel, but unoxidizable. It is to this metal we wish to direct particular attention. There are various qualities of it, some worth 12, 20, 30 and 40 dollars per ounce, and Mr. Morton told us he had paid even $120 for a superior quality. It is found in the ores of platinum associated with irridium, osmium, and palladium. Irridium is used by some for the points ot gold pens, but rhodium is the dearest and best. All of this metal used in the United States comes from the Peruvian or Russian mines, but Mr. Morton assured us that there was plenty of it in California, and he had seen some which had been brought from that gold land. It is also found there, pure, associated with sands, and requiring no chemical manipulation for its separation, as in the platina ores of the Ural. Our gold seekers in California should direct their attention to this metal, as it is far more valuable than gold; it is of a white glassy steel color, and in minute roundish particles like sand; the round globular particles are the best for pen points; in fact, out of one ounce of this metal, perhaps not one seventieth of the granules can be used, the rest are rejected. A fine particle of rhodium is soldered on the indented point, of each stub of gold—the solder is mostly composed of gold, for unless it is good, ink soon corrodes it, and the rhodium point drops off; this is the case with poor pens made by indifferent makers. After the pen is pointed, it is rolled out between rollers with indents in them to save the points, until the stub is drawn out to its proper length and correct thinness; the rolling also makes the gold elastic. Many suppose that gold pens can be re-pointed, and we actually had one re-pointed ourselves seven years ago, by getting it exchanged for a new one; we paid the full price, feeling conscious, at that time, that our old pen had really a new point put upon it. But old pens cannot be re-pointed, for the heat employed to solder on the point, renders the gold as plastic as a piece of tin; the heat changes the relative position of the crystals of the metal—thrusts them out, as it were, and the gold requires rolling or hammering afterwards, to give it elasticity—that spring so requisite for pens; this is the reason why old pens cannot be re-pointed. Some makers do not hammer their pens after being rolled; they are never so good. After being rolled they are cut to the proper form in a finishing die, then stamped with the name of the maker, and afterwards turned up to the rounding quill form. This is done in the establishment above named in a new and ingenious machine, invented by Mr. Morton, which makes a superior pen. After this the point is slit with a thin soft copper disc revolving at a great velocity; the great speed makes the soft metal disc cut the hard metal rhodium; the gold is slit with another machine, therefore to make a slit in each pen, it has to undergo two operations. The point is next ground on a copper wheel revolving at a high velocity; this is a very delicate operation, and a good artist gets high wages. After this the pens are "stoned out," that is, they are ground down on the inside and out by fine Water-of-Ayr stones, by hand, on a bench alongside of a tub of water; the stones are long, thin, roundish slips, and the pens have to be operated so as to make one part more thin than another, to give them the proper spring; they are then polished on swift revolving copper rollers, and afterwards finished with fine powder and soft chamois skin. Thus, to make a gold pen, it undergoes twelve operations; inferior pens can be made with less labor, but they soon develope their true characteristics.

This business has largely increased, and is rapidly extending. New York is the headquarters of the manufacture, and there are now perhaps no less than forty makers in this city. How the demand is made to increase, we do not attempt to explain; it shows, of a truth, that Americans are verily a writing people.

A Few Reasons why Persons should Subscribe for the Scientific American.

In this age of rapid improvement, no manufacturer, mechanic, or artizan, is safe who does not strive to keep posted up in inventions and discoveries. Scarcely a day passes but we receive a dozen letters from persons describing some invention on which they have expended considerable money and labor, which has been illustrated in some ot our former volumes; the usual inquiry is, "can a patent be obtained for the invention?" Had they been subscribers to the Scientific American since its origin, they would have saved time and money; it has been the means of saving hundreds of dollars to many subscribers. One article in this volume, in the series on boilers, was the means of enabling a subscriber to save $1,000 per annum for fuel. Many papers, at the same price, have more reading matter; if more reading matter was our aim and object, we could print a larger paper at less expense; but quality and quantity are two different things. No man can now be considered intelligent, unless he is well informed on subjects of science and art; it would be much better for all young mechanics, everywhere, if they read more useful and less trashy works. As a volume for binding, the Scientific American is a yearly record of all new and useful discoveries, and many of the rare receipts which we publish are worth more than the year's subscription.

Draining of Harlaem Lake.

In No. 9, Vol. 2, Scientific American, we published an illustrated description of the "Leeghwater" Steam Engine, for pumping the waters out of the Harlaem Lake, in Holland, in order to reclaim the land This lake covered about 70 square miles, and was 13 feet deep. Three engines of great power were constructed in England in 1846-7, but the pumping was not thoroughly commenced until 1848. The steam engines are nearly through with their labors; the last accounts from Europe stated that much of the bottom was now exposed, and only large pools were left. To lower the lake one inch, four million tons of water had to be lifted. In three years the lake was lowered 7 feet 3 inches; in December, last year, it was lowered to 9 feet and a half, and now it is nearly dry. It is believed that no less than 700,000,000 tons of water have been lifted by the engines since they commenced operations. This is equal to a mass of solid rock, a little more than three square miles, and one hundred feet high, that is, allowing fifteen cubic feet for a ton. We can easily see what an immense amount of labor the engines performed, and what power there is in coal applied in a state of combustion to water, for the purpose of raising water. Each engine was 350 horse-power, and so economical were their working qualities, that two and a quarter pounds of Welsh coal per hour were all the fuel used for each horse-power of an engine. The Dutch engineers were nearly unanimous for using the old-fashioned wind-mills, which had been so often employed for the same purpose, but it was asserted by two English engineers that the steam engines could be built and do the work for one half the amount of wind-mills; this has been completely fulfilled.

The people of Albany are enthusiastic about a tunnel under the Hudson at that place; why don't they try H. N. Houghton's Aerial Bridge, illustrated on page 169, Vol, 7, Sci. Am.

A Chapter of Suggestions.

Foreign Subscribers—Our Canada and Nova Scotia patrons are solicited to compete with our citizens for the valuable prizes offered on the next Volume. [It is important that all who reside out of the States should remember to send fifty cents additional to the published rates for each yearly subscriber—that amount we are obliged to pre-pay on postage.]

Binding—We would suggest to those who desire to have their volumes bound, that they had better send their numbers to this office and have them executed in a uniform style with their previous volumes. Price of binding 75 cents.

Missing Numbers.—Subscribers who have failed to receive some of the numbers during the year, can have them supplied by stating what numbers are missing at the time of remitting for the new volume.

Infallible Rule—It is an established rule of this office to stop sending the paper when the time for which it was pre-paid has expired, and the publishers will not deviate from that standing rule in any instance.

Receipts—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

Give Intelligible Directions.—We often receive letters with money enclosed, requesting the paper sent for the amount ot the enclosure, but no name of State given, and often with name of post office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post office at which they wish to receive their paper and the State in which the post office is located.

To Correspondents.—Condense your ideas into as brief space as possible, and write them out legibly, always remembering to add your name to the communication.—Annonymous letters receive no attention at this office. If you have questions to ask, do it in as few words as possible, and if you have some invention to describe, come right to the business at the commencement of your letter, and not fill up the best part of your sheet in making apologies for having the presumption to address us. We are always willing to impart information if we have the kind solicited.

Patentees.—Remember we are always willing to execute and publish engravings of your inventions, provided they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engravings executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

☞ The above chapter of variety we have inserted for the mutual benefit of our patrons and ourselves. If our subscribers will retain in mind the suggestions contained in the above paragraph they will be likely to be benefitted thereby; besides they will save us much valuable time and a good deal of perplexity.

Patent Appeals.

A Bill has passed Congress, authorizing appellants from the decision of the Commissioner of Patents to have their appeals tried by the Assistant Judges of the Circuit Court of the District of Columbia, because the Chief Justice of the District, Judge Cranch, is now too frail to try them. The law, as it stood, demanded all appeals from the decision of the Commissioner to be tried by Judge Cranch in person. He is now very old, and has not been able to act upon any such cases for a long time. There are a number of appeals, which, for a long time, could not be acted upon, owing to the want of the amendment now made to our patent laws. We hope the Assistant Judges will act upon them promptly, and thus relieve those deeply interested in their decisions.