

Phenomenon of Molten Metals.

Mr. Boutigny, the French *savant*, who has pursued with great perseverance after the phenomenon of water in a spheroidal state, has lately published some very singular statements; apparently new to some, but not in a degree to anybody whatever. The following extracts of his are from a French Journal.

"In the year 241, Sapor or Chapour ordered the Magi to do all in their power to persuade them and bring them back to the faith of their ancestors. It was then that one of the pontiffs of the dominant religion, Adarabad-Mab-rasphand, offered to submit to the fiery ordeal. . . . He proposed that eighteen pounds of melted copper, issuing from the furnace, all hot, should be poured on his naked body, on condition that if he was not injured by it, the unbelievers should yield to so great a miracle. The trial was said to be attended with such success, that they were all converted.' The historian adds, with an air of doubt, certainly allowable in such a matter, 'We see that the religion of Zoroaster had also its miracles and its legends.'

Now this fiery ordeal, undergone with such success by Adarabad-Mab-rasphand, is in plain truth an experiment of primitive facility and simplicity, and which is any but miraculous.

I stop here for an instant, for I fancy that I see the smile of incredulity rise on the lips of some who do me the honor of listening to me—that smile, so discouraging to one who is insincere, but which only heightens the ardor of him who intends to practice no deception, and who does all in his power not to deceive himself.

To such persons, then I would offer this encouragement; the little that I have still to relate appears improbable, but it is true, and that is enough. Having said this, I continue.

In France, in England in Italy, wherever I have had occasion to speak of bodies in the spheroidal state, I have met with persons who have put to me this question; May there not be some connection between these phenomena and that presented by men who run barefooted over liquid metal (?) still incandescent, or who plunge their hand into molten lead, &c.? To all I have answered, Yes, I believe that there is an intimate relation between all these facts and the spheroidal state. And then, in my turn, I put this question; Have you witnessed the fact which you tell me? And the answer has invariably been in the negative.

I avow that all these *ouïs* and the marvelous legends which I had read in various works on the fiery ordeal and incombustible men, admitted without reserve by some, obstinately denied by others, excited my curiosity greatly, and gave me a strong desire to verify all these phenomena, and to recall them to the recollection of cotemporary observers, for alas! all this is as old as the world; *nil sub sole novum*.

I wrote first to my friend, Dr. Roche, who passes his life in the midst of the blast furnaces of the Eure, and who is the physician of a portion of the Cyclopean population who feed them. I requested of him precise particulars. All that he could ascertain was, that a man named La Forge, of from thirty-five to thirty-six years of age very corpulent, walked step by step barefooted on the pigs after the casting: but he had not seen this. This was not enough to dispel my doubts.

I then applied to a foundry at Paris, where I was laughed at and shown the door. I retired, hanging down my ears, thinking over the difficulties of verifying a single fact, and such a simple one.

Subsequently I was fortunate enough to meet with M. Alph. Michel, who lives in the midst of the forges of Franche-Comte. M. Michel promised me, with the greatest kindness, to inquire into these facts, and to report upon them if desired.

The following is an extract from the letter which he did me honor to write to me, dated the 26th of last March:

'On my return home, I did not fail to obtain information from the workmen of the facts of the case, (the immersion of the finger in the incandescent melted metal,) and most of them laughed in my face, which did not deter me. Lastly, being one day at the forge of Magny, near Lure, I put the question again to a work-

man, who answered that nothing was more simple; and to prove it, at the moment when the metal in a state of fusion issued from a Wilkinson, he passed his finger into the incandescent jet. A person employed in the establishment repeated the experiment with impunity: and I myself, emboldened by what I saw, did the same. . . . I may observe, that, in making this trial, none of us moistened his finger. I hasten, sir, to acquaint you with this fact, which seems to support your ideas on the globular state of liquids; for the fingers being naturally more or less humid, it is, I think, to this moisture passing to the spheroidal state, that we must ascribe their momentary incombustibility.'

The following are the experiments which I have made:

I divided or cut with my hand a jet of melted metal of five to six centimetres, which escaped by the tap; then I immediately plunged the other hand in a pot filled with incandescent metal, which was truly frightful to look at. I involuntarily shuddered. But both hands came out of the ordeal victorious. And now, if any thing astonish me, it is that such experiments are not quite common.

I shall of course be asked, what precautions are necessary to preserve one's self from the disorganizing action of the incandescent matter? I answer, none—only to have no fear, to make the experiment with confidence, to pass the hand rapidly, but not too rapidly, in the metal in full fusion.

Otherwise, if the experiment were performed with fear, or with too great rapidity, the repulsive force which exists in incandescent bodies might be overcome, and thus the contact with the skin be effected, which would undoubtedly remain in a state easy to understand.

To form a conception of the danger there would be in passing the hand too rapidly into the metal in fusion, it will suffice to recollect that the resistance is proportionate to the square of the velocity, and in so compact a fluid as liquid iron, this resistance increases certainly in a higher ratio.

The experiment succeeds especially when the skin is humid; and the involuntary dread which one feels at facing these masses of fire, almost always puts the body into that state of moisture so necessary to success; but by taking some precautions, one becomes veritably invulnerable. The following is what has succeeded best with me: I rub my hands with soap, so as to give them a polished surface; then, at the moment of making the experiment, I dip my hand into a cold solution of sal-ammoniac saturated with sulphurous acid, or simply into water containing some sal-ammoniac, and, in default of that, into fresh water."

[We would like to see any man allow melted copper to be poured upon him with impunity, but every boy knows the trick, of running his finger through the flame of a lamp, and licking a red hot poker with impunity.]

Canal Across the Isthmus of Panama.

At a recent meeting of the Institution of the Civil Engineers, London, Lieut. Loyd read a paper on uniting the Atlantic and Pacific by a canal across the Isthmus of Panama. His views inclined to a canal in preference to a railway. The paper reviewed the surveys of Garella, Morel, and others, who had examined the country subsequently to Col. Lloyd. It examined the various lines proposed; and gave reasons for preferring that which, starting from the bay of Limon, would proceed by a short canal, through a flat country, to the river Chagres—thence up the river Trinidad, as far as its depth would suit—and then, cutting a canal into the Rio Grande, debouch at Panama. This line, it was contended, in the present state of science of engineering, presented no obstacles, excepting the climate and the expense, to prevent a canal being cut of sufficient depth and dimensions to float, from one river to the other, the largest ship in her majesty's navy. The climate was stated, from personal experience, to be as good as in any tropical country, except in some particular spots where, from local causes, certain complaints were rife. The expense could be accurately estimated only by the survey of experienced engineers; but in a country abounding in fine timber, and the best building materials of all kinds—whilst no great

chain of mountains, as had been fancifully depicted on suppositious charts, had any existence except in the imagination of the designer—it was fair to allow that the cost of a canal of such limited length could not be very great, and supply of water might be presumed to be ample in a climate where there was copious rain of nine months in each year. The means of accomplishing the work were then considered. It was argued that a portion of the convicts from that country might be more advantageously sent there than to the present penal settlements. The means of preventing their escape were shown; and a proposition was made for introducing with them a number of convicts from Bengal, and the other Presidencies, whose language and habits would effectually prevent their mingling with the British convicts; whilst their power of enduring fatigue under a tropical sun and during rains, and their simple mode of living, would render them valuable pioneers for the more robust Englishmen. It was stated that a great deal of native labor might be obtained at a cheap rate; sixpence or ninepence per day and his rations, consisting of a pint of rice, a pound of dried beef, and a "golpe d'aguardiente," being the ordinary pay of a "peon." The chief point, however, insisted on by the author, was the great field opened in the isthmus for emigration, for the surplus population of that country. He contended for its superiority over the Canadas and over Australia. It was comparatively within an easy distance; the emigrant would be at his destination almost on landing; the resources of the country were great and the productions varied and cheap, whilst the present population was infinitely disproportioned to the superficial area of the country. It was argued that a grant of land might be easily obtained, in liquidation of the debt owing by the government of the country, and as the British had once possessed an establishment there in 1675 to 1690, under the charter of the "Scotch Darien Company," so a footing being again obtained, a barrier of the most formidable character would be opposed to the annexation propensities of transatlantic brethren, who were making rapid strides towards the possession of this valuable tract. Appended to the paper was a copy of the commission granted to Lieut. Col. Lloyd by Gen. Bolivar, authorizing his examination and survey of the isthmus and of two rivers—which had previously been most jealously refused to every one. This document was alluded to with some natural pride, as proving that to an English engineer was due the merit of having been the first to examine and propose a work of such vital importance to the whole world, but which had been since claimed, and in fact appropriated, by other persons without acknowledgment.

[The reasoning in the above paper is apparently incontrovertible, but experience in the first Scotch colony should be taken as evidence to prove that the climate is not adapted to northern constitutions. If Britain plants a colony there, so should the United States.—Our possessions on the Pacific demands of us the right of way, in some way or other, across the Isthmus.]

Manufacture of Iron, Phosphorus, &c.

One of our subscribers writes us, that having tried various plans in vain, to get rid of the phosphorus in his ore, (Wisconsin Hematite) he is now desirous of trying Wall's process, if we can furnish the information, so as to test its value in that respect. We would state, that Wall's process professes to remove the phosphorus, and being in possession of the principal features, we here present them for the benefit of our subscribers who are in the iron business.

Mr. Wall's patent consists of two parts, first in adding certain substances to the metal, while in a state of fusion; 2nd, in applying electricity to the metal while in a state of fusion, and during its cooling. In carrying out the first part, two compounds are made use of, termed A and B.

The compound, A, is formed by mixing two parts of iron filings or turnings with five parts of black rosin, by melting the rosin and stirring in the iron filings. When the mass has sufficiently cooled it is made into balls of about

five pounds weight each; and in using them these balls are thrown in the melting-furnace on the surface of the fused metal, in the proportion of one of the balls to every 5 cwt. of metal. The compound B, is formed by thoroughly mixing two parts of common salt and five parts of rosin, turpentine, or other carbonaceous matter, and making this also into balls of about five pounds each, and throwing these on to the surface of the melted metal, in the proportion of one pound to each cwt. of the metal, after the compound, A, has been employed. In carrying out the second part, a battery is employed, consisting of platinum and zinc plates, containing eight pairs, 6 inches by 4 of active surface, in separate cells of dilute sulphuric, and strong nitric acid, arranged in the form known as Grove's battery, or 32 pairs of same sized plates arranged in the manner, commonly known as Smee's battery, which give sufficient electricity for all general purpose. In applying the electric current a rod of iron is inserted into each extremity of the mould, into which the metal is to be cast, if the casting be horizontal; or into the bottom and top of the mould, if the casting is vertical. These two rods of iron are connected with the two poles of the battery respectively; and when the melted metal is poured into the mould, it serves to complete the circuit, and electricity will continue to traverse it as long as the connection with the poles of the battery remain unbroken. The current should be kept up for a considerable time even after the metal has solidified; but if continued for too long a time, the metal would be decarbonated and converted into wrought iron. The patentee also passes an electric current through the fused metal while in the furnace, by inserting a rod of iron in the lower part of the furnace so as to be in contact with the metal, which rod is attached to one pole of the battery, while another rod in connection with the opposite pole is moved by the operator in constant contact with the melted mass, over every part of the surface, thus directing the current through every portion of it.

We presume that this information will be of considerable interest to all our iron manufacturers. Overman, in his work, says, "Hydrated Oxide of Iron, Brown Oxide, Hematite Bog Ore, should all be roasted, not for the purpose of oxidation, but to drive off the acids, and destroy the sulphurets and phosphurets—all ores of this class contain more or less injurious matter. Sulphates of iron should be carefully roasted, so should phosphates, with a liberal access of air."

The more carbon that is present, the greater difficulty there is to, drive off the phosphorus, for carbon is necessary in every case to produce a combination of phosphorus with the metal—the process of Wall, therefore, in expelling the carbon, would lead us to infer that it would be most suitable for the removal of phosphorus, and sulphur also. The process is at least worthy of a trial by everyman connected with the business. The patent is English.

Franklin's Mode of Lending Money.

"I send you, herewith, a bill of ten louis d'ors. I do not pretend to give much, I only lend it to you. When you return to your country you cannot fail of getting into some business that will, in time enable you to pay all your debts. In the case, when you meet another honest man in similar distress, you will pay me by lending this money to him, enjoining him to discharge the debt by like operation when he shall be able, and meet with such another opportunity. I hope it may pass through many hands before it meets with a knave to stop its progress. This is a trick of mine to do a great deal of good with a little money. I am not rich enough to afford much in good works, and am obliged to be cunning, and make the most of a little."

To Cure a Felon.

Take one table spoonfull of Red Lead and one table spoonfull of Castile Soap, mix them with as much weak lye as will make it soft enough to spread like salve, and apply it in the first appearance of the felon, and it will cure it in ten or twelve hours.

J. D. B.

BRADFORD, March 25th, 1850.