

## MISCELLANEOUS.

## The American Engineer, Draughtsman, and Machinist.

Books on elementary engineering are not scarce, but good ones are exceedingly rare. The above is the title of a new book published by C. A. Brown & Co. Phila., the editor is Oliver Byrne, Mathematician, Civil, Military, and Mechanical Engineer, the author and compiler of a long list of books, Surveyor General of the Falkland Isles, Professor of Mathematics in the College for Civil Engineers, London, etc., etc. Such a distinguished and talented man of science should be able to produce a good book surely, but it appears to us that the long string of titles on the title page, is intended to astonish the ignorant natives of these United States with a profound reverence for the supreme erudition of the professor. Our practical workingmen, for whom the book is specially designed, are too well read and instructed in both the theory and practice of their professions not to know wheat from chaff.

The author says, "no apology is offered for the mathematical proofs that set aside erroneous doctrines or establish new facts, however illustrious the propounder." By-and-by we will present one of these new facts. On page 107 he lays down the principles upon which practical mechanics are based and machines operate, which he calls "an exposition of the false mechanical doctrines promulgated by Newton, Hutton, Gregory, Robinson, and other English writers, which erroneous doctrines are yet taught in schools, colleges, and by public lecturers." In the whole of his exposition we perceive nothing new or original.

The chapter opens with an account of the dispute between Newton and his friends on one side, and Leibnitz and his friends on the other side, about the measure of mechanical force. Newton, he says, was on the wrong side, and in another place he tells us the dispute was dropped "because it was observed that the different properties expressed by  $w \times v$  (Newton's formula) and  $u \times v^2$  (Leibnitz's formula) were not at variance." How, then, could Newton be on the wrong side.—Again, we are told "the terms *momentum* and *impetus* removed the ground work of the dispute." The dispute then, if these two terms removed its ground work, was anything but a creditable one for such famous mathematicians. The exposition, however, of the errors of Newton, Hutton, &c., would have been more creditable to the modesty of the expositor, if he had told us whence they were derived, such as pages 53 and 54, &c., Vol. 2, second series of the Glasgow practical Mechanics' Journal and Engineers' Magazine, the editor of which being one of those writers whose erroneous doctrines on mechanics Mr. Byrne exposes by using his own works (Mr. Johnstone's) for that purpose.

James Watt comes in for a slapdash attack too. Respecting the nominal horse power of an engine he says: "Such silly calculations are of little value although laid down by that great Scottish celt James Watt who was taught by an Irish celt, Dr. Black; the nominal horse-power of a high pressure engine has never been defined." The remark about the nominal horse-power of an engine never having been defined, is certainly very funny, and exhibits an extensive acquaintance with the English language. The slur about Watt is a libel on all the celts, it is as much as to say, "he could not but be a silly calculator, when taught by an Irish celt. The eminent Dr. Black was not an Irishman but a Frenchman; the author must have made a mistake in substituting a different native place from the real one of Dr. Black, as he substituted the matter of the "Practical Mechanics' Magazine" for his own.

Let us now speak of a new fact discovered by the author, it relates to the causes of steam boiler explosions. He says, "Mr. Oliver Byrne has discovered that the true cause of the explosion of boilers is the introduction of the medium of space." Let us quote his own words respecting the whole of this wonderful discovery. He says:—

"When the boiler is supplied with an insufficient quantity of water to compensate for that which is converted into steam the water

within is lowered, and the steam takes a temperature that has not a corresponding elastic force as the moisture to supply proper density is denied. Of this the ordinary safety-valve gives no indication, and if it be opened it produces an explosion; the steam rushes out in a conical form, base uppermost; this leaves a space in the centre of the cone, through which the medium of space enters. An explosion may be produced without raising the safety valve, for a supply of water suddenly introduced will produce the same effect."

Now we think the above is something which will open the eyes and ears of our practical engineers. Here we have one of the grandest discoveries of the age presented to us, viz., the cause of steam boiler explosions. This medium of space we think must be a "banshee." The hint about such a cause we have read of before, in the description given by an English engineer of the introduction of the first steam engine to Hindoostan. The natives believed that an English spirit was in the boiler, and he would not work until well roasted, when off he went with a scream. The engineer taught the Hindoo fireman that if he did not provide a sufficient supply of water to the spirit in the boiler, he would break out and destroy the whole country—this spirit was no doubt the Hindoo medium of space, for as spirits can enter the key hole of a door, one can surely find no difficulty in entering a steam boiler through the small space in the centre of a cone of surcharged steam. The above quoted paragraph is certainly the richest, funniest, and most wonderful one we have come across in any work on engineering in the 19th century.—We have always understood that all matter was a medium of space, but it seems that there is something else which is a medium of space, consequently matter will have to be set down after this as a spiritual medium which will at once open up another field of discovery, and reveals to us the cause of the spiritual rappings, tables moving, &c.

## The Hillotype again.

"Coming events cast their shadows before"—and in consequence we may shortly expect something extraordinary in the art of Daguerreotyping, after the Report lately presented by the Senate Committee on Patents, respecting the so-called discoveries of Mr. Hill in Heliochrome. It is not our wish, nor indeed have we the slightest inclination to disparage any discovery in the field of science—"Honor to whom honor is due" is our motto, and in accordance with it our only desire is to see that honor worthily bestowed. But in the instance just mentioned, there has been exhibited such a tortuous manner of proceeding that we are uncertain what to believe. It is now two years since the discovery of Heliochrome was first announced by Mr. Hill, which created so great a sensation that the subject was the general topic of conversation. Indeed, so confident were the public at large as to its immediate adoption that the Daguerreotypists were sensibly injured in their business, from the fact that people refused to have their portraits taken unless in the natural colors, or deferred a sitting until it was openly practiced. In a short time, however, the bubble burst, portraits began again to be taken in the ordinary manner by Daguerre's process, and nobody was a gainer but one individual, who, on the strength of his reputation as the discoverer of Heliochrome, obtained a large number of subscribers among Daguerreotype artists for a volume of receipts the value of which was nil, and the cost some dollars. It followed, as a matter of course, that the Daguerreotypists generally were indignant at such conduct, and those publications that endorsed the so-called discovery were held up to contempt for their ill-judged partizanship. It would naturally be supposed that this would be the termination of any such attempts, and that the Hillotype would be buried for ever in the shades of oblivion. But quite the reverse; Mr. Hill appears never to have given up his cherished scheme of something, and every now and then we are surprised with intelligence not of what he does, but of what he can do. It is singular, however, that these accounts are always close after some fresh news of what has been done

by others. It was thus that about six months ago Mr. Hill issued a fierce "pronunciamento" after the appearance in the public prints of M. Niepce's Memoir to the French Academy; and now, since fresh accounts of what has been done abroad in Europe and at home in America, have been published in our columns, Mr. Hill comes out with a Report of the Senate Committee on Patents, and would compel the world, *nolens volens*, to acknowledge his right to the title of discoverer of Heliochrome. To do this will require, however, something more than a Senate Report, and we must be convinced by deeds, and not by words, before we can place implicit reliance upon what has been affirmed. If Mr. Hill has really discovered what he asserts, why is he so backward in making it public? he knows that it would be for him a source of great pecuniary advantage, and that the Daguerreotypists, as a body, would grant him any terms to bring it into practical operation. Overtures to that effect have been already made by them, and yet are we to believe that Mr. Hill, with such knowledge in his possession, would be slow in seizing all the credit and advantage that would inevitably ensue? Such an idea is preposterous, and the course that he has pursued proves the contrary, for while so reluctant to publish his process, he leaves no stone unturned to obtain a favorable notice from private persons or official bodies. This last step that he has taken is however the most extravagant, and instead of fortifying his claim, renders it weaker in our estimation. Instead of taking the proper steps to substantiate his claims as an inventor in the Patent Office, he exhibits a few specimens of what he calls sun-coloring, to a committee in no ways suited, either professionally or otherwise, to give an opinion upon the subject, and imagines that, by a favorable report, his claim as the discoverer is confirmed. Such however is not the case, and the field is still as open as it ever was to competitors; at present nobody can claim to be the discoverer, nothing certain has hitherto been obtained either in Europe or America. Attempts have been made in the right direction, and some partial success has been obtained by different individuals—to obtain the colors is one thing, but to fix them, which is the point, is another, and this last desideratum has not yet been attained by any one either in France or the United States.

## Manufacture of Porcelain Ware in America.

We read with no little interest an article on "American Porcelain," in the Journal of the Franklin Institute, of last January, by T. Tucker, of Philadelphia. An editorial introduction to the article states that the manufacture of plain porcelain was recently commenced in Connecticut. The letter of Mr. Tucker states that his father commenced to make porcelain in Philadelphia in 1826, and after many experiments and failures (for he was not acquainted with the art) in 1827 his efforts were crowned with success. He died in 1832, when his son (the author of the letter) and his brother, with Judge Hemphil continued the manufacture, until, from different causes, he was left in charge of the whole manufacture himself to 1837, when he gave it up and commenced ordering his goods from Europe.

When we read the article we had no idea that there was a porcelain manufactory in the United States, much less one within three miles of our office, but so it is. This beautiful ware is manufactured at Green Point, L. I., by C. Cartlidge & Co., it was commenced about four years ago by gentlemen who had been brought up to the art in England.

The first articles made were porcelain door furniture, which would seem to be made successfully, it we may judge from the variety of designs which are produced, some of them of elaborate decorations, in colors and gold, but the manufacture is now extended to other useful articles, including inkstands, curtain pins, cane handles, knocker plates, pitchers, tea ware, dinner ware, &c.

Much of the work is done by machinery, which is of great finish and ingenuity.—Touching the machinery we may claim to have some judgment. The articles thus produced are of greater regularity and of higher finish than those made in the ordinary way. Moreover, this ware is done with

greater celerity, being finished in less than one-fiftieth part of the time usually occupied in other countries, not having to test in different stages of progress.

The mechanical department is under the management of Benjamin Irving, assisted by Alexander Moffatt. We have been admitted to an inspection of this ingenious part of their business (not open to the public) which seems admirable, in contrivance and efficiency and which has excited in us both pleasure and surprise. Though it is rarely that the pioneers of an art reap a just reward, we are informed that this enterprise has been successful in its establishment.

Of the quality of their porcelain wares, it is claimed that they are equal to any other produced in the world, and after a somewhat extended examination (to which the public can be also admitted) we are not disposed to dispute the claims. We are not aware that we have seen more exquisite and finished productions from any country.

We were much gratified with the inspection of their fine models in clay, including some busts of celebrated men (Washington, Webster, Clay, Taylor, &c.) This department is under the care of Josiah Jones, an English artist of great skill and taste.

There can be no doubt but the efforts previously made to establish the manufacture of porcelain in our country failed, partly from not having discovered the best materials, and partly from the want of practical knowledge of the art.

We would remark that our inspection of these works was in a measure accidental, and we had not the remotest conception of finding about 100 persons employed in all the various branches of modelling, moulding, turning, firing, painting, &c. The manufacture of porcelain is a beautiful art, rather let us say it combines various arts requiring the finest taste, the greatest skill of hand and eye, carefulness, and a vast amount of knowledge, especially in the person who manages the business.

Mr. Irving, the machinist of the establishment, has invented a new and improved boiler, a brief description of which will be found on our invention page. This boiler we saw in operation supplying steam to the engine which drives all the machinery in these works. Although not constructed in every part according to the whole plan of Mr. Irving, its saving of fuel is surprising, as it furnishes steam with one-third the amount of fuel which was required for the boiler which it has supplanted. Upon the economical Cornish principle, the steam is generated at a high pressure and expanded before it enters the cylinder. In the old boiler, owing to bad water, encrustations were soon formed, but a continual circulation is kept through the coiled pipes in this boiler, and between the chambers, so that no scale is permitted to form in the pipes or on the plates. The amount of fuel consumed, is only about three pounds per horse power, a very small quantity.

## A California Diamond.

It is stated that a diamond in the rough, as large as a pigeon's egg, has been discovered in Toulmac Co., California, which is to be exhibited in Stockton and San Francisco, and then brought to New York. A correspondent of the "San Francisco" Herald says it has been carefully and scientifically tested by Dr. F. Banks, a graduate of the Medical University of Louisiana, who pronounces, it, beyond all doubt, to be a diamond of very rare purity. It is said to be "larger than the Crown Diamond of England, which is valued at ten millions of dollars." This is rather too tough a story to believe without further evidence of its truth.

## The French Railways.

The number of finished railways in France is twenty-seven—measuring in the aggregate 2,303 miles. The receipts of these roads in 1851, were \$20,002,912, and the receipts in 1852 were \$24,785,938. This excess of nearly five millions of dollars in the receipts of the year 1852, over those of 1851, is to be attributed mostly to the completion or extension, during the year that has just closed, of several of the most important lines of railways radiating from the capital to the frontiers.