

**MUSEUMS OF EUROPE.—METROPOLITAN MUSEUM OF ART.**

As educators of the people the public museums of Europe perform no insignificant service. The artist and the artisan are not only allowed free access to such picture galleries and museums, but are encouraged to study and copy from the beautiful objects of art there exhibited.

Societies under various names, and patronized by the opulent and learned, and often supported in part by the government, award prizes for superior workmanship to those who copy or improve upon the original designs.

We read in a London contemporary that the new Sèvres Museum is doing its utmost to afford valuable instruction to those interested in studying the history and the progress of ceramic art. During the last few months a methodical classification of all the examples exhibited has been accomplished, and each one is classed according to its historical and geographical position as well as with regard to its technical worth. For this purpose labels are attached to all the pieces, giving the date and place of manufacture and the marks on various pieces, so that a wide knowledge can often be gained of a subject merely from studying these labels, 4,000 of which have lately been affixed. It is to be wished, says the same paper, that South Kensington could be made equally instructive in the way of ceramic labels.

Pity it is that our new Metropolitan Museum of Art is situated so far from the heart of this city as to render it almost unavailable to strangers, and to that class of residents who much appreciate its treasures, and who would derive the most benefit from frequently visiting it. But its inconvenient location in a hollow at the upper side of the Central Park is not the worst feature. The building itself is so lacking of architectural beauty—is such a monstrosity in design—that the visitor is almost repelled from entering after reaching it. Certainly but a fraction of the number who visited the Metropolitan Museum of Art when it was located in Fourteenth street will pay it a visit in its present out-of-the-way position.

**BARFF'S NEW PROCESS FOR PRESERVING IRON.**

Professor Barff lately gave a lecture in London on the results obtained by his new process since its first announcement, about two years ago, an account of which was then published in the SCIENTIFIC AMERICAN.

The process consists, in brief, in subjecting the surface of the iron to the action of superheated steam at a high temperature. The result is the production upon the surface of the iron of a hard, smooth, and durable skin of black oxide of iron, which prevents rust far better than any paint, lacquer, rubber, or other compound or process heretofore known.

Iron articles to be treated by this new process are first cleaned with dilute sulphuric acid, and afterward with bran water. They are then placed within a muffle, the temperature of which is 500° or 600° Fah.; dry superheated steam at a temperature of 1,000° Fah. is admitted, atmospheric air being carefully excluded. The formation of the black oxide skin rapidly takes place.

This coating has peculiar properties. It is so hard that it resists emery powder and the file. Many substances which adhere to ordinary iron will not stick to this prepared iron. For cookery the new process is especially useful. Barff stew pans and other utensils are more cleanly, as arrowroot and other substances can be cooked in them and the vessel cleaned with great ease. Barff vessels can be heated red hot without injuring the skin. Barffed iron is proof against damp, water, hot or cold, and stands exposure to the weather far better than galvanized or painted iron. Barffed boiler and ship plates, whether of iron or steel, are superior to all others, as they do not corrode and sediment does not readily adhere. The process is applicable to almost every conceivable form of iron manufacture, and appears to be a scientific, important, and valuable contribution to the industrial wants of the world.

Professor Barff's interesting lecture is given in full in the current issue of our SUPPLEMENT, No. 174. See table of contents in another column.

**VERMONT MARBLE.**

Prof. J. P. Henderson, of Loyola College, Baltimore, Prof. J. E. Watson, of Oberlin College, Ohio, and some students of mineralogy, have been testing the capacity of Vermont and other marbles and other monumental stones to withstand the corroding influences of our climate. The results appear in a long letter from Prof. Henderson to the Nashua (N. H.) Gazette. Their first examination was of granite, of which 382 different specimens were tested. While the most of these were composed of such material as would wear tolerably well in the open air, nearly every piece showed a lack of ability to withstand long exposure to rough weather.

Marble was then tried, and as Vermont and Italian marbles are most used for out-door monuments, attention was given chiefly to these. The principal quarries of Vermont are the West Rutland, Sutherland Falls, East Dorset, Pittsford, and Columbian. In point of durability, the West Rutland marble was found to take the precedence, and the others followed in the order of their names. They found also that our native Vermont marbles are better adapted to stand our climate than the Italian, which is rapidly going out of use, and will most likely disappear entirely for outside work.

Prof. Henderson says: "The depth of most Vermont quarries now is such that better marble is obtainable than was produced by them three years ago. Hence our verdict, as

rendered by the above course of research and reasoning, is, don't select as stock for cemetery work marble of a dark or bluish cast, but, rather, select the light color with greenish cloud."

**The Gary Motor**

To the Editor of the Scientific American:

In your issue of April 5, page 209, you publish a letter from me and make the following remarks: "None of the experiments here mentioned by Mr. Gary are new; there is no neutral line in any such sense as he asserts; what he above especially claims as his discovery is simply a very old, well known phenomenon imperfectly and erroneously alluded to in his italics. . . . All he appears to have done is to revive a few time-honored experiments, and trot out before the public an ancient perpetual motion delusion."

With all due regard for the opinions and assertions of the SCIENTIFIC AMERICAN, may I take the liberty to ask it to "trot out" before its many intelligent readers some of those "time-honored experiments," or tell them where they may be found; and will it also tell them where the "old and well known phenomenon" alluded to in my italics may be found, and in what manner I have imperfectly or erroneously alluded to it?

Surely the SCIENTIFIC AMERICAN must be in position to do this, as "time-honored experiments" must be on record. Can the SCIENTIFIC AMERICAN refuse to do this and maintain its well-earned reputation for fairness and ability?

W. W. GARY.

Huntingdon, Pa., March 31, 1879.

REMARKS.—In the letter of Mr. Gary's, published in our paper of April 5th, after describing his experiment of bringing a bar of magnetized iron into the vicinity of a magnet, he says: "What I claim as my discovery is that the iron, if of proper proportions, will change its polarity before it comes in contact with the magnet."

This alleged new discovery we specified as old and well known. Mr. Gary now desires us to state where this old and well known experiment may be found described. We will not now occupy space further than to give one reference, because the phenomenon is very familiar to experimenters. Mr. Gary will find it in "Rudimentary Magnetism," Snow Harris, 2d edition, revised by Noad (London: Lockwood & Co., 1872), page 81.

The author, in describing the influence of the pole of a magnet upon a bar of soft iron, says:

"It is, however, to be observed that the mean line will vary with the distance of the iron from the magnetic pole, and will approach the center of the iron as we increase its distance from the pole, and conversely, will approach the near extremity as we decrease its distance from the same pole; so that on making contact with the magnet the mean line vanishes, and the whole mass exhibits the same polarity as the pole of the magnet."

This may be readily demonstrated with an armature of considerable width, and the fact holds good in an armature of any kind. This affords the true explanation of Mr. Gary's sheet metal and tack experiment; shows the non-existence of any neutral line in the sense by him asserted; and proves that his alleged new discovery is simply a very old, well known phenomenon, imperfectly and erroneously set forth in his claim.

Mr. Gary claims from first to last that there exists in the magnetic field a neutral line, where the polarity of an induced magnetized iron bar ceases and beyond which it changes.

A method of proving that there is no reversal of polarity in the iron is illustrated by the accompanying engravings. Two helices without iron cores, having opposite poles pointing in the same direction, are connected with a battery, as in Fig. 1. When the armature is remote from the helices, polarity manifests itself in the bar in accordance with the established laws of magnetism, and a needle presented to the N end will have its S end attracted. On moving the armature quite near the helices the same end of the armature will repel the S end of the needle and attract the N end; but the polarity of the armature has not been reversed, anomalous as it may appear. This may be verified by disconnecting the battery, as shown in Fig. 2, when the magnetism remaining in the bar will be found the same as in its first position in Fig. 1.

As to the possibility of making the force of permanent magnets available as a source of power, Mr. Gary absurdly claims to cut off the attraction of the magnet by the use of a thin piece of sheet iron placed on his so-called neutral line; but this is no cut-off. The sheet iron acts simply as an induced magnet of very little power, sufficient, of course, to affect the delicately poised needle placed in its immediate vicinity; but when the needle is removed a short distance from the sheet iron

armature, the superiority of the inducing magnet will assert itself, and the needle will obey it almost as if no armature were present.

As there is no real basis for Gary's pretended claims to a new discovery concerning magnets, it follows that he is no better able to make a magnetic perpetual motion machine than his various predecessors. Some very curious frauds have been perpetrated in this line. Dircks, in his "Perpetuum Mobile," describes and engraves some alleged magnetic perpetual motors, one of which is stated to have been seen in the year 1821 in actual operation by crowds of people. Like Gary's, it was alleged to be run only by permanent magnets; but it was subsequently found out to be a deception.

We were called upon recently by a gentleman who stated that he was the friend and helper of Mr. Gary. He averred that he had himself seen Gary's magnetic motor in operation; that as many as three hundred people had also seen it. All we can say is that if the witnesses suppose that the machine was worked by permanent magnets, like many people before them, they were grossly deceived.

**The Plague in Russia.**

There is no doubt, says the London *Lancet*, that the medical profession in Russia are at the present moment in a state of profound unrest as to the near future of plague there. From the beginning of the outbreak in the province of Astrakhan, there has been a fear—determined perhaps by the course which the plague pursued during its recent prevalence in the province of Ghilan, Northwestern Persia—that this outbreak was probably but the forerunner of a wider and more serious manifestation in Russia which might be looked for in the course of spring. The cessation of the outbreak in the province of Astrakhan has not in any degree modified this view of the subject, and as the spring draws on expectation is on the alert to distinguish the first indications of that which is dreaded. The occurrence of another and happily not fatal case of plague within the infected area on the Volga, in the course of last week, gave rise to a momentary fear that the period of intermission between the forerunning outbreak and the greater invasion apprehended had come to an end. It is not, however, the indication in this direction which exercises at the present moment the minds of our professional brethren in Russia. Their attention is fixed upon seeming forerunners of the dreaded malady, which would appear to be scattered almost over the whole area of Russia in Europe. Our readers will remember the case of bubonic malady, unattended with much general disturbance of the system, which Professor Botkine observed a few weeks ago in St. Petersburg, and which he pronounced to be the slight form of plague which often precedes the deadlier manifestations of the disease. The weight of medical opinion in St. Petersburg declared itself against Professor Botkine's view of this case.

It is now known that the case in question is not the only one of the sort which has occurred in St. Petersburg, and that the later cases have been free from the complications which led to doubt in the earlier case. It is now known, too, that similar cases of this dubious bubonic affection have been observed also in Vitebsk, Tsaritsyn, Odessa, and in Warsaw; and it may be inferred that there is at present widely scattered in Russia a form of bubonic disease, of seemingly trivial character, unfamiliar to the medical profession there, and which it is feared may be of the sort which preceded the several recent appearances of plague in Mesopotamia, which occurred also prior to the late outbreak of plague in the province of Astrakhan, and which is, in fact, a form of plague.

Under these circumstances, it can be understood with what anxiety the near future as to plague is regarded in Russia by those who are most competent to judge of the possibilities of the case, and how anxiously obscure forms of disease are now being scanned over a large part of that empire. It is well that this state of things should be fully apprehended here. We shall not now have long to wait before the fate of Russia and our own prospect as to plague for the present year may be determined. But with the events of the Mesopotamian and Persian outbreaks before us, if Europe should be so fortunate as to escape from any further appearance of plague this year, it will be premature to think we have escaped with only the circumscribed explosion on the Volga until another winter and spring has passed.

**Iron in New Zealand.**

The Government of New Zealand has, within a few years, constructed over 1,000 miles of railroad, all the material for which, except the sleepers, have been carried out at a heavy charge in the way of freight, etc., from England. The present Minister of Public Works, the Hon. James MacAndrew, has determined to make the experiment of promoting the iron industry in the colony, and has, in the terms of the advertisement, which we published last week, calling for tenders for 100,000 tons of steel rails (or any portion thereof) to be manufactured in the colony from New Zealand ores.

A pamphlet containing full information on the subject, illustrated by maps and plans, has been published by order of the Government, and may be had from the Agent-General of the colony, Sir Julius Vogel, K.C.M.G., at 7 Westminster Chambers, London, by ironmasters and others desirous of obtaining further information on the subject.

