

TROUBLE AT THE PATENT OFFICE—"RE-VISING BOARD" APPOINTED.

WASHINGTON, D. C., Oct. 25, 1860.

Messrs. Editors:—I noticed, in your issue of the 13th, that rumor was prevalent about the Patent Office that Commissioner Thomas contemplated a restriction upon the acts of the Examiners, by appointing from one of their number a "Censor," or "literary scavenger," as you termed it, whose duties, as you enumerated them, would be multifarious. I was quite amused at your definition of the proposed duties of the appointee to the Censorship, and, at the same time, startled at the thought of so great a responsibility being imposed upon a single individual.

Having friends in the Patent Office, and not knowing exactly what was meant by the movement which your paragraph foreshadowed, I set about to learn the true facts, that you might communicate them to the inventors of the country through your journal. I learn that the new bureau has been officially created by appointing two monitors, instead of one; that Messrs. Taylor and Peale have been transferred from their respective rooms as Examiners to this exalted position, and are to be termed the "Revising Board." The duty of this board is to act as sentinel or watch-dog over all the other Examiners. In other words, the common Examiners are required by the new rule to make obeisance to their former associates who comprise this new board, in the shape of written reports to be submitted to them, setting forth their reasons or motives for granting each and every patent. The duty of the Revising Board is to examine and determine if the reasons alleged by the Examiner for ordering the patent to issue are, in their estimation, ample; and if so, they are confirmed for issue; but if not, they are withheld. So you see the work of twelve principal, and as many more assistant, Examiners are reviewed by these two new appointees, in whom is vested power to grant or withhold, as they may see fit.

Of the two gentlemen forming this new board, on whose shoulders rests the responsibility of granting or rejecting all applications for patents now made, I will add a few words. They are among the oldest Examiners in the Office, but, while they possess abundant talent and are skilled in the arts and sciences, I think you will agree with me in the opinion that they are not suited for the duties imposed upon them. They will act honestly, I have no doubt, but they have been educated in the illiberal old school practice of the Office, which prevailed as far back as 1850, '51 and '52, when terror to the inventor reigned triumphant,* and will, I fear, unwittingly return to their early proclivities, forgetting the injunction of Commissioner Mason when he was at the head of the Office.

I am fearful that the constituting of this new board on the part of the Commissioner is the commencement of a retrograde movement in the prosperity of the Patent Office, and I shall not be surprised to see the number of applicants for patents greatly diminished under the new order, while patent solicitors will reap a rich harvest from the increased number of cases which will be rejected, and subsequently appealed to a higher tribunal. If the machinery in the Patent Office becomes much more complicated, it will, by and by, require an attorney more astute than a Philadelphia lawyer to obtain a patent for his client. I shall await, with interest, the working of this new rule, and may write you again, noting the result of my observations. LIBERAL.

[While we have no great fear for the success of the inventor and applicant for a patent under the new rule, we are apprehensive of the prosperity of the Office and harmony of feeling among the Examiners in the Office will not be promoted. We shall examine the working of this new piece of official mechanism introduced by the Commissioner, and referred to by our correspondent, and discuss the subject in some future issue.—Eds.]

ANOTHER VARNISH FOR PATTERNS.

Messrs. Editors:—I find a solution of gum shellac in burning fluid (alcohol and spirits of turpentine), with lampblack, makes a very good varnish for ordinary pat-

* It was in these years that two-thirds of the applications for patent were rejected. In 1853 Judge Mason was appointed to the Commissioner'ship, and he soon brought about a new order of things, by impressing upon the Examiners the fact that it was their duty to see on what points in an invention placed before them a patent could be allowed, instead of striving to discover on what grounds they could reject an application; and thus has the Office, for the past eight years, continued to flourish, and patentees to prosper, up to the present time.

tern work, giving a body by successive coats. I prefer the fluid to clear alcohol; besides with us it is cheaper.

C. P. S. W.

Lake Village, N. H., Oct. 15, 1860.

THE POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

[Reported expressly for the Scientific American.]

The usual weekly meeting of this association was held at the Institute rooms, on Thursday evening, 18th ult.—Professor C. Mason presiding.

MISCELLANEOUS BUSINESS.

Expansion of Steam.—Mr. Rowell proposed a problem as follows: Let there be two vertical cylinders of two cubic feet capacity each. In the lower half of each steam at 60 lbs. over atmospheric pressure; in the upper half of one let there be a vacuum, and in the upper half of the other steam at atmospheric pressure. Now, let the steam in both cylinders be expanded, it is required to show what will be the resulting pressure.

The problem led to an animated discussion, and while all seemed to admit that the final pressure would be somewhat less than what a literal interpretation of Mariotte's law would require, yet there was no agreement as to the exact amount of variation. Mr. Dibben, however, contended that there is a variation of precisely 4.6 per cent on expanding steam to a double volume.

At the usual time—half-past eight o'clock—the president called up the regular subject:—"Recent Practical Applications of Magnetism."

DISCUSSION.

The President remarked that his attention had been recently called to some experiments now in progress on the New Jersey Central Railroad, bearing on the utility of increasing the adhesion of car wheels to rails by means of magnetism. The magnetizing of locomotive driving wheels is not new. Several plans have been proposed and tried, especially in France, and it is admitted that the previous attempts have been failures. In all of these inventions the wheel is magnetized by means of an electric current—the wheels are made electro-magnets. Some have proposed to apply helices to the spokes of the wheel, or in other ways, so as to revolve with it. But in the New Jersey invention, the helices are stationary and inclose the lower part of the wheel, and are bent so as to correspond to the curve of the wheel. One of the difficulties (which I understand has been recently overcome) is a suitable battery. A battery of power constancy, and easy of management, is required. It is said that, by this use of magnetism, the engineer may dispense with the sand box on wet rails, and that the power of traction of any light locomotive may be almost indefinitely increased. The experiments seem to have been a complete success.

Mr. Seely—In my opinion, if such experiment had first been proposed and discussed among men of science they would never have come to actual trial. If the facts are precisely as the president seems to believe, there is here another case where facts exist in spite of the views of scientific men. In the absence of details of the apparatus and experiments, we can discuss the subject only in view of the established laws of magnetism and our limited experience, and hope we may be proved to be in error if we condemn the project of magnetizing car wheels. There is a special advantage in magnetism for producing adhesion when we can get enough of it, in our power of controlling it, using little or none when we do not need it, and a great deal in emergencies; thus enabling us to use a light locomotive for all purposes. But there is the essential and difficult—perhaps impossible—condition of our ability to produce the magnetism. There is no peculiar virtue in magnetism over gravity to produce adhesion where the pressure is the same. A strip of light iron, attracted to a magnet with a force of 100 lbs., will slip with precisely the same force as a 100 lb. weight on another piece of matter when the surfaces in both cases are in the same condition. The law of all kinds of attraction or influences is precisely the same, *i. e.*, the force varies inversely as the square of the distance. In the case of gravity, the centers of attraction are in the locomotive and the center of the earth, and as these points are very far removed, the variation of attraction, by raising the car from the track or by imperfect contact, is practically nothing. But the case with the magnetism is far different; for here the centers of attraction are in the wheel and in the rail, and very near their sur-

faces, so that a slight variation of the distance will have an immense effect on the practical power of the magnetism. It is well known that, if you interpose a piece of paper between a magnet and its armature, the lifting power of hundreds of pounds is lessened to a few ounces. Particles of dust or a film of oxyd seriously interferes with the use of a magnet. Now, on the railroad, admitting that you may have an attraction of a thousand pounds when the wheel is in perfect metallic contact, such a contact cannot be practically maintained. The attraction would be, in fact, a series of jerks, which, if the car jumped from the track, would tend to carry the rail with it. But, as I have intimated, it is not to be expected that a car wheel can be made a powerful magnet. Its shape and the quality of the iron forbid it. When all of the very great difficulties of the battery—its bulk, its acid fumes and its complexity—are overcome, there is yet left the difficulty of the peculiar action of magnetism. It requires time to make a magnet of iron; the maximum effect of the electric current is not shown at once, and, moreover, time is required to induce magnetism into an armature, before the maximum weight is lifted. The wheel has its pole at the bottom, and unless it is revolved slowly, it will not receive enough magnetism to have useful effect, however powerful the battery or perfect the helix.

Mr. Dibben—The lifting power of a magnet is much modified by the shape and surface of its poles, and the shape, surface and weight of the armature. If there be but a single point in contact, the attraction will be almost nothing. This must be somewhat the case of the wheel and the rail; for if both are mathematically true in form, the parts in contact will be only the tangent line. The battery may be perfect and the wheel saturated with magnetism, and still the attraction to the rail be almost inappreciable.

Mr. Seely—Perhaps it is this little effect which the experimenters reckon on, remembering that it was the last hair which broke the camel's back. (Laughter.)

Professor Hedrick believed that, if the wheels of a locomotive be magnetized to complete saturation, the locomotive, by means of a crane, could be lifted from the track by a few hundred pounds beyond its weight.

Mr. Dibben—The most powerful electro-magnets are made only of the purest and softest iron, a kind of iron which never gets into car wheels or rails.

The President—It is evident that the closeness of contact of the wheel to the rail will be increased by the weight of the car, and this greater contact will favor the magnetic attraction. Now, I wish to ask how great is the practical effect of this fact.

This point was spoken to by several members, but no conclusion was arrived at as to the definite law which governs the case.

Mr. Garvey—The law of attraction has been correctly stated when the force radiates from a point; but when there are an infinite number of points, or a surface even or uneven, the law in practice is found very different. A magnet may be so shaped that the attraction shall vary inversely as the distance, and in the case of the wheel this may be near the fact. It is known that magnetism produces a molecular change in iron, and it may be such a change as will materially favor adhesion. One well authenticated experiment is better than a month of theoretical discussion.

Mr. Johnson—What rate of speed was used in the New Jersey experiments?

The President—The experiments were with freight trains, which run at the rate of from 12 to 15 miles per hour.

Mr. Johnson—The rails would soon become permanent magnets.

The President remarked that the gentlemen conducting the experiments were desirous of having a fair and full examination of the subject, and had authorized him to say that it would be agreeable to them to communicate with a committee appointed by the society.

A committee—Messrs. Seely, Dibben and Hedrick—were thereupon appointed.

Mr. Seely—It should be understood that, in the absence of actual experience, we have only theorized on this subject. We are willing and anxious to receive further light, even enough to confute us. We have no pride of opinion in the matter.

Subject for next week—"Caloric Engines."