

Scientific American.

NEW-YORK, JUNE 28, 1856.

Awarding Prizes for Improvements

The awarding of prizes properly for new and useful improvements by Mechanical, Agricultural, and like associations is a subject which deserves particular public attention at the present time. Prizes are offered by such institutions as inducements to excite inventors and others to study and labor, in order to accomplish superior results—to make improvements in the arts. This method of exciting the inventive genius of any people is commendable, and wherever it has been carried out in a proper spirit, has been the means of developing improvements and advancing civilization. When any association offers public prizes for the accomplishment of any specific object, it becomes a public contractor for the efforts of genius and skill, and is sacredly bound to fulfill its part of the engagement. If it fails to do this, it not only injures its own character, but retards the progress of improvement by destroying the confidence of many ingenious persons regarding the integrity of all associations of a kindred character.—It is thus that such persons may be prevented from becoming future candidates for such prizes, and the genius that would otherwise be called into exercise for victory in such contests, is left to lie dormant and unproductive.

The qualifications required of any society for awarding prizes properly, are simple and prominent. They embrace, on the part of those chosen as judges, and examining committees, a perfect knowledge of their duties, and unswerving honesty in fulfilling them.—With these qualifications, no society need have any fears in awarding prizes for improvements; but without them no society can do its duty wisely or well. With perfect ability to judge correctly, but lacking integrity to award justly, the least deserving candidate for a prize may receive the highest, and the most deserving candidate be denied his just claims. In this manner a great wrong may be done; and at many of our Fairs such wrongs, we believe, have been done. Again, with perfect honesty on the part of an examining committee, but without ability to judge correctly respecting the nature of the improvements submitted to their inspection, the awarding of prizes must be with them like the drawing of a lottery—a blindfold operation.

We have been led to make these remarks at present to direct public attention to the subject, by a circumstance which recently transpired in this city.

Our readers will remember that we related on page 284, how the Common Council of this city had offered three prizes of \$500, \$300, and \$200, for the three best steam fire-engines publicly exhibited on the 6th of last month; and that the chief prize had been awarded to the most inefficient machine exhibited. This was our expressed opinion at the time. It now affords us pleasure to record the fact of that decision being reversed, and a new one made, which gives satisfaction, we understand, to all who can impartially judge of the merits of the case. An appeal was taken by those justly interested in the former decision, and it was referred to a special Board of Engineers, who, in addition to the public trial already reported, gave each engine a private trial, and were at great pains to make the examination thorough in all respects. This Committee awards the first premium to Lee & Larned's, the second to Burnham's, the third to Smith's machine.

By the former decision, the machine which now receives the lowest prize was awarded the highest. The Board of the Common Council and that of the Aldermen have concurred in the decision of the new Examining Committee, and so has the public. In this case no harm finally resulted from the error first committed, because it has been rectified; but there are a great number of institutions in our country who offer and award prizes annually at their Fairs, and whose decisions, owing to the nature of their organization, once made,

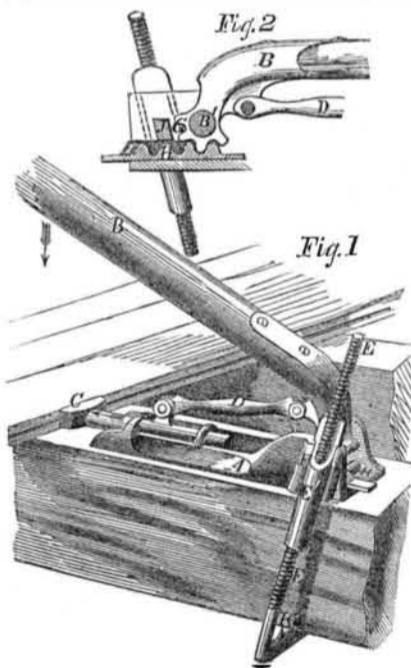
right or wrong, are never changed. Many complaints have at various times reached us regarding wrong and improper awarding of prizes at various Fairs, but not knowing the facts of the particular cases we could not intelligently give our opinions regarding those complaints. But at this particular period of the year, prior to the holding of the now very numerous State and County Institutions, Annual Fairs throughout our country, we call upon all such institutions to be very careful in their selection of judges and examining committees for awarding prizes. Let no persons be appointed to such offices unless they possess the qualifications we have pointed out, or hereafter some of them may be called upon—not to their credit—to reverse their decisions or suffer public disapprobation of their conduct.

Recent American Patents.

Improved Quadrant.—By Thomas Hedgcock of Wandsworth Road, England.—This is a very ingenious nautical instrument for accurately determining both latitude and longitude, without a chronometer and without lunar observations. An observation of the sun, only, is required. We are informed that the instrument has been practically tested, and found to be highly successful for the purposes named. If this is so, the invention is one of great importance and value. We hope to receive further confirmations of its good qualities.

Improvement in Augers.—By N. C. Sanford, of Meriden, Conn.—Consists in passing a screw down through the eye of an auger, through the wood handle, into a nut or plate. By turning the screw, the nut or plate is brought snugly up to the under side of the handle, and firmly secures it in the eye. This is a capital improvement. It enables the carpenter to use almost any sort of a stick for an auger handle, for it does not require close fitting.

Improvement in Carpenters' Clamps.—By H. W. Oliver, Whitneyville, Conn.—The implement shown in our engraving is intended to assist carpenters in clamping boards firmly together during the process of laying floors.



A is the bed plate of the instrument, having a hand lever, B, pivoted near its lower end, at B'. C is the clamp bar, connected with lever B, by means of rod, D. When lever, B, is pressed down, clamp, C, will be moved forward, in the direction of the arrow, and pressed against the edge of the board.

The implement is attached to the floor beam by means of the screw hook, E, the nut of which slides up and down between guides, F, on plate A. The lower end of lever B terminates in a segment gear, G (see fig. 2,) which works the rack, H, back and forth. One end of the rack, H, is made wedge-shaped. J is a button which attaches nut E' to A. When lever B is pressed down, the rack, H, moves in the direction of the arrow and pushes the wedge, I, under button J, whereby the latter is lifted, and with it nut E', and hook screw, E. The teeth of the latter, at K, are thus made to enter the beam and hold the implement from slipping.

When the rack, H, is moved in a contrary direction, the wedge, I, withdrawn from beneath the nut, J, and the hook screw, E, drops, carrying the teeth, K, out of the wood, so that the implement may be moved along on the beam to a new position.

When the lever, B, is bent down (as in fig. 2,) it remains self-fastened, the rod, D, being brought to a parallel line, like a toggle joint.

The facility with which this implement may be fastened and detached, its simplicity, cheapness of manufacture, and great strength, render it a most excellent assistant for carpenters. Address the inventor as above, or apply to J. A. Knight & Co., 334 Broadway, New York City, for further information.

Improved Windlass.—By James Emerson, of Worcester, Mass.—Consists of a capstan, windlass, and friction straps or brake, peculiarly arranged. The capstan turns independently of the windlass, and the movement of both is controlled by the strap. The improvement facilitates the warping of vessels to any given position when at anchor. It is also highly useful for general marine purposes. Mr. Emerson is a genius and has patented a great number of valuable improvements in this line of invention.

Improvement in Locks.—By M. Erb & F. C. Goffin, of Newark, N. J.—Consists in placing a series of sector tumblers upon a shaft, whereby they may be operated without the use of springs, and the lock thus rendered extremely simple, far more durable, and less liable to get out of repair than the locks commonly used.

Improved Corn Planter.—By George Atkins, of Pittsburg, Pa.—This is a small implement, to be carried in the hand. The lower part is thrust into the ground wherever the seed is to be deposited. By the act of thrusting, the seed is liberated from within, and caused to fall into the earth. The parts are very simple.

Machine for Thrashing and Cleaning Grain.—By Alfred Belchamber, of Ripley, Ohio.—The claims of the patentee will be found in the official list, in another part of this paper. The invention was fully illustrated and described in our last week's issue.

Improved Apple Parer.—Horatio Keyes, of Leominster, Mass.—Consists in the peculiar construction of the knife head, whereby the cutter is made to conform to the inequalities of the surface of the apple, and cause the apple, however uneven or irregular in form, to be pared in an even and perfect manner.

Machine for Cutting Down Corn Stalks.—By W. S. Tilton, of Boston, Mass.—Consists of a two-wheeled vehicle, having two upright shafts, placed one on each side near the wheels. Horizontal knives are attached to the shafts, which are made to revolve by connection with the wheels of the vehicle. As the machine advances, the stalks are clipped by the knives, and fall prostrate. Farmers will be pleased with this invention.

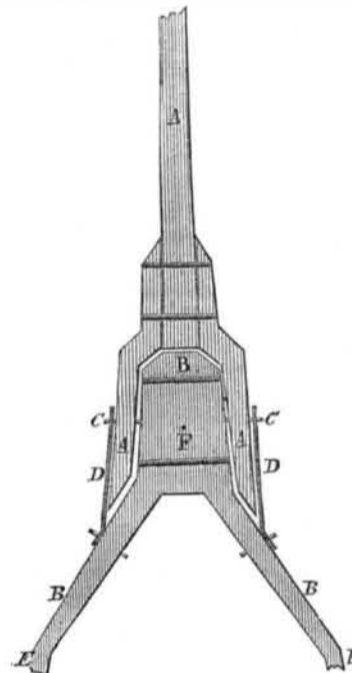
Portfolio for Binding Music Sheets, &c.—By James Shaw, of Providence, R. I.—A roller, constructed of wood, is permanently attached to the back of the portfolio on the inner side of the covers. The roller is equal in length to the covers, and has a longitudinal groove cut in it its entire length; it also has grooves cut in it circumferentially at equal distances apart. Metallic rings are fitted loosely into the grooves. The music sheets, maps, engravings, or other articles, are secured to the rings within the portfolio, by means of a needle and thread.

Improvement in Plows.—By N. S. Lockwood and J. D. Winn, of Dayton, Ohio.—Consists in a peculiar mode of attaching the post or breast to the mold board, and in the peculiar mode of attaching the share to the mold board. This invention is alleged to cheapen the cost of manufacture and increase the durability of plows to which it is applied.

Improved Harvester.—By J. C. Pluche and L. C. Pluche, of Cape Vincent, N. Y.—Consists in a peculiar means employed for raising and lowering the sickle, whereby it may be made to cut the grass or grain at any desired height from the ground; whereby, also, the sickle is allowed to conform to the inequalities of the ground. This appears to be a good invention.

Improvement in Cake Baskets.—By R. Gleason, Jr., of Dorchester, Mass.—Consists in having the lids or covers connected to the basket by swivel joint hinges, whereby the lids may be used as covers over the top of the basket, or, if not wanted, turned down underneath the basket, out of sight. This invention is designed for metallic or plated cake and fruit baskets. It is an ingenious and highly ornamental improvement.

Improvement in Wagon Tongues.—By J. T. Banghman, of Frazeesburgh, Ohio.—The object of this invention is to reduce the weight usually sustained on the necks of the animals that draw the vehicle. This is done by dividing the tongue into two parts, one of which is stationary. The whiffletrees are placed upon the stationary part, and the length and weight of the other portion or guiding tongue considerably lessened.



In our engraving, A is the movable or forward part of the tongue, and B the stationary or after part. They are united by a bolt at C. D are braces for supporting C. The after tongue, B, is connected at E with the axle of the vehicle.

The whiffletrees, or, as some call them, the double-trees, are generally attached to the movable tongue, and their weight is thus thrown upon the necks of the animals. But by the present improvement the whiffletrees are attached at F on the stationary tongue. This lessens the weight of the movable tongue, permits it to be made shorter, prevents galling of the necks of the animals, &c. The advantages of this improvement speak for themselves. Patented May 6th, 1856. Address the inventor for further information.

Recent Foreign Inventions.

Manufacture of Alum.—Peter Spence, chemist, of Manchester, England, has secured a patent for obtaining liquor or cake alum by a new process. He takes China clay, and breaks it into small pieces about the size of beans, and places them on a false bottom in a vessel lined with lead. The clay is now covered for about twenty-four hours with water impregnated with sulphurous acid gas, mixed with 1 per cent. of sulphurous acid, and slightly heated. This dissolves the iron out of the clay. The clear liquor is now run off, and the clay retained, is again covered with pure water, which, after standing six hours, is also run off. Diluted sulphuric acid is then added, heat applied, and the liquor brought up to 240° Fah., and kept at that until the sulphuric acid is saturated with alumina; this requires about forty-eight hours to accomplish. The solution is then run off in leaden coolers, where the alum concretes into cakes.

Chlorine and Peroxyd of Iron.—G. A. Thibierge, London, has patented a peculiar process for manufacturing chlorine and accessory products. In the common way of manufacturing chlorine, the peroxyd of manganese is employed, but this is dispensed with in the new process. Mr. Thibierge passes hydrochloric or muriatic acid gas over iron at a high temperature, and thus obtains protochloride of iron and hydrogen gas. He then

passes common air over the proto-chloride of iron at a high temperature, and thus obtains peroxyd of iron and chlorine gas.

Photography.—E. Mayall, of London, has obtained a patent for the application and use of a new material in photography, known by the name of "artificial ivory." This substance is formed of small tablets of gelatine or glue immersed in a bath of sulphate of alumina, (alum) or the acetate of alumina. A combination takes place between the alumina and glue, and forms the substance for receiving the photographic pictures, as a substitute for the common metal plates and prepared paper. It is stated that it receives a polish equal to ivory, and the tints of the pictures have an exquisite softness, far surpassing those of the daguerreotype. The process for obtaining pictures is the same as that commonly pursued in photography.

Artificial Hard Grain of Leather.—To give any kind of leather the appearance of genuine hard grain, J. A. Richards, of London, takes a skin of real hard grained leather, electrotypes it, and then bends the plate thus produced round a roller or drum, and mounts it on a shaft. He then passes the leather to receive the hard grain appearance under this roller, which is subjected to great pressure.

Preserving Animal Food.—This subject appears to be attracting great attention abroad at present. We recently (on page 308) gave the description of the process patented by M. Demait, of Paris. The following is exactly similar to M. Demait's, with the addition of a finishing coating of an albumen composition. The meat is cut in pieces and is pressed, to remove all the blood and serum, and then subjected to the fumes of sulphuric acid gas for a few hours. It is then taken out, exposed to the air for a short time, and dipped into a warm composition of animal albumen, some molasses, and a decoction of marsh mallows. This composition covers the meat with a coating, which protects it from the action of the atmosphere. This method of preserving meat has been somewhat extensively tested, and with success, by the French government. Meat thus treated, it is said, has been carried from France to Algiers, and back again, and it tasted sweet and pleasant when cooked. A patent for this process was obtained in the name of R. A. Brooman, of the London *Mechanic's Magazine*.

Joseph Hand, of London, has also secured a patent for preserving meat by a process varying but little from the above. It consists in exposing the meat, in a close chamber, to the action of binoyd of nitrogen, nitrous acid, and sulphurous acid, in a gaseous state, either singly or combined. The specific action of the acid gases is the great feature in all these patented processes. Smoking meat, to render it more preservative, is a very old, common, and well known method. It is the specific action of the pyroligneous acid in the smoke on the meat, which accomplishes the preservative result. The action of the English and French governments in granting recent patents for the application of certain acid gases, or a combination of them, in preserving meat, shows us how liberal they are in encouraging inventors in making improvements, however small, in important and useful processes.

Still Another.—M. Martin de Lignac, of Paris, has also been granted a patent for preserving meat. It consists in subjecting raw meat, cut into cubes about an inch square, and subjecting them in close chambers, to currents of warm air at about 75° Fah., until the meat has lost half its weight. It is then powerfully compressed in cylindrical tin boxes to about one-fifth the space occupied before it was dried. The lids of the boxes are then soldered on and a small hole left in the top of each. The boxes are then submitted to a heat of 212°, to raise any moisture in the meat into a steam, when they are soldered up perfectly tight.

Important Patent Cases.

The following important patent cases were tried during the present term of the United States Circuit Court, held by Judge Betts in New York City:

Isaac M. Singer and Edward Clarke, versus James Pigot.—This was an action for an alleged infringement of a patent granted to Morey & Johnson, in 1849, and re-issued to the

plaintiffs as assignees, in 1854, for improvements in sewing machines.

The point chiefly in controversy was the right to the use of a device (now generally used in sewing machines,) to hold the cloth to the feeding apparatus by a yielding pressure during the operation of sewing with a machine. This being claimed in the re-issued patent, and not in the original, the defendant set up that the re-issue was too broad to be sustained by the original: that the two were not for the same invention: that in the Morey & Johnson machine there is no patentable combination of the spring pressure with the feeding apparatus: that the claim is equivocal and bad from ambiguity: and that the thing, as claimed, was not new with the patentees, but had been before used and patented by Thimonnier, in 1830 and 1845, in France; and used by Howe in 1845-6, and by Bradshaw, in 1847, in this country.

The trial continued two weeks, and the jury after being out all night, and nearly all day, on Monday, were discharged by the Court, as not being able to agree,—eight being for the defendant and four for the plaintiffs.

Charles M. Keller and A. L. Jordan were for the plaintiffs; and George Gifford, of New York, and Joel Giles, of Boston, for the defendant.

Alexander Smith and Jonathan Smith versus Alvin Higgins, Elias S. Higgins, and Nathaniel D. Higgins.—This was a suit for an infringement of a patent granted to Alexander Smith, in 1850, and re-issued in 1852, for apparatus for parti-coloring yarn, by dyeing, by free immersion for ingrain carpets, known as "Tapestry Ingrain Carpets."

The plaintiffs and defendants are both manufacturers of carpets, and the plaintiffs claimed a large amount of damages.

The defendants admitted the novelty of the apparatus, as described, both in the original and re-issued patent, and contended that the same was not infringed by them: that the apparatus employed by them was not invented by the patentee, and that if the re-issued patent be construed so as to cover the defendants' apparatus, then it would be void, first, because it would be a fatal departure from the original patent; and, second, because it would then cover more than what was new with the patentee.

The trial continued for two weeks, and the jury, after being out one day, rendered a sealed verdict for the defendants.

The case was tried by Charles M. Keller and Samuel Blatchford for the plaintiffs, and by George Gifford for the defendants.

Notes on Patented Inventions.—No. 11.

India Rubber Manufactures.—On March 9, 1844, Charles Goodyear was granted two patents, one for shirred or corrugated india rubber goods, and the other for a machine used in making them. The claim for the goods was "Forming them of strips or threads of india rubber, and covering them on opposite sides with lamina of cloth, leather, or other material, and uniting them all together by a cement of india rubber, so as to produce a new manufactured article." The machine patented with the manufactured article, embraced a pair of rollers and an endless belt; the threads or strips of india rubber, with the cloth on both sides, were made to adhere by the cement, when passed between the rollers. There was also a stretching frame combined with the rollers, for preserving the strips or threads of india rubber at therequired distances apart.

On the 15th of June following, Chas. Goodyear obtained his great patent for vulcanizing india rubber. This embraced mixing the india rubber with sulphur and carbonate of lead, and submitting the compound to a heat of about 270° Fah. The white lead and the subjection of the compound to this heat, are the new features of this invention; the sulphurization was the discovery of N. Hayward.—This new process of Mr. Goodyear was a very great improvement upon his old one of tanning the surfaces of such fabrics by the use of a metalized acid. The high heat to which the compound was subjected promoted the chemical union of the sulphur with the india rubber, and formed a vastly superior and improved fabric to any previously manufac-

tured—it was real vulcanized india rubber. In a trial which took place in England in June, 1854, for an infringement of Hancock's patent for vulcanizing india rubber by the sale of American india rubber shoes, Mr. Goodyear gave evidence that he had invented the above improvement in 1842, and sent an agent to England to endeavor to sell the secret. He, however, committed the great oversight of not securing a patent in that country before he exhibited his samples to Mr. Macintosh, and his foreman, M. Hancock.—Hancock did not purchase Mr. Goodyear's invention, and smelling sulphur in the samples he set to work experimenting and discovered the process for himself. It has been stated, however, that while Mr. Goodyear had only used a high heat in a warm chamber to vulcanize his goods, Hancock was the first to use steam for the purpose, which is a superior method.

We have now arrived at the grand focal point in the history of india rubber manufactures—the invention of vulcanization, or that property imparted to it, by which it is rendered permanently elastic, not easily affected with acids or alkalis, and which enables it to withstand all changes of atmospheric temperature. This invention is one of the most important ever discovered, and the credit of it is due to America.

By a calm investigation of the subject, the evidence we have examined completely ignores the claims of Hancock of England, as the first inventor. But the invention of vulcanized india rubber is not, as we have shown, the work of one mind, nor the result of a lucky stray thought, it is a discovery of growth, as it were. Hayward discovered the sulphurization process, then some years afterwards Goodyear discovered the heating process; both are required to produce vulcanized india rubber.

Since this discovery the application of the substance to an almost endless variety of manufactures is one of the most enterprising evidences of its useful and adaptable character. Quite a number of patents have been received for such manufactures, but they are all subordinate, and of minor importance to the producing of the vulcanized material, the patent for which will not expire June, 1858.

Henry G. Tyre and J. Helm, of New Brunswick, obtained a patent for an improved machine for cutting threads of india rubber for shirred goods in Oct. 1844; and in the same month Horace H. Day obtained a patent for a machine for stretching the threads of india rubber, and facilitating the manufacture of such goods.

In April, 1845, Nelson Goodyear, of Newton, Conn., secured a patent for combining india rubber with grit, iron, and other metal filings.

In May succeeding he also secured a patent for combining india rubber with fibrous materials, like silk and wool, to give solidity and tenacity to india rubber fabrics, and to make them firm and solid with a smooth surface like leather.

On the 5th of July succeeding, Charles Goodyear obtained a patent for combining stocking-knit cloth with sheets of india rubber, thus producing a new water-proof fabric, which, we believe, has not since been manufactured.

In the same year Horace H. Day, J. Helm, and H. G. Tyre secured a patent for an improvement in machinery for cutting threads of india rubber, and James Bogardus, of New York, obtained a patent for another machine for the same purpose.

On April 17th, 1847, William Ely, of New York, secured a patent for vulcanizing india rubber without the use of sulphur, substituting for it, calcined, or the carbonate of magnesia mixed with india rubber, and submitting the compound to steam heat. We do not know if this compound is equal to a sulphur compound or not; but the two are essentially different in their nature.

In June following J. Gilbert and G. Gay, of New York, obtained a patent for treating india rubber, embracing no less than seven claims, covering the use of sulphurizing india rubber with the fumes of sulphur, as a substitute for flower of sulphur. Also for exposing

the fabrics to the action of dry air combined with steam, to remove the clamminess from them. Some arrangements of the machinery were also claimed.

In September following, James Thomas, of New York, also obtained a patent for sulphurizing india rubber with a sulphur acid, preferring a hypo-sulphite, or a mixture of hypo-sulphite with sulphuret of lead. These two patents seem to be designed to obviate the one embracing the simple use of flour of sulphur. The improvement is questionable.

In April, 1848, C. Goodyear secured a patent for making india rubber balloon articles, such as balls, in a different manner from that secured by E. Chaffee in a previous patent.

On the same date Charles F. Durant obtained a patent for dissolving india rubber with perchloride of formyle.

In January, 1849, H. G. Tyer and J. Helm, of New Brunswick, N. J., were granted a patent for the use of salts of zinc as a substitute for white lead in india rubber compounds containing sulphur. As Patrick Mackie had obtained a patent, in 1834, for the use of sulphate of zinc, it appears to us that as his patent has expired, its use is now public property connected with india rubber.

This subject will be concluded next week.

Does the Moon Rotate on her Axis.

Since we published a short article, on page 320, stating that the common accepted theory of the moon rotating on her axis once in 28 days, was disputed in England by J. Simonds, Inspector of Schools, and others, we have received a number of communications with diagrams to illustrate how it does rotate once in the time specified. All these communications prove exactly what their authors intend they should, but they are not proper answers to the question in dispute. By the moon rotating on her axis once during her sidereal revolution round the earth, she must present the same face to one fixed point of the earth, but not the same face to every portion of the earth. It is asserted by those who dispute the axial rotation of the moon, that, like the ball of a governor on the steam engine, continually revolving, but not rotating and showing the same face to its shaft, so the moon always shows the same face to every part of the earth. Is this so? That is the question. It can easily be determined by observation at different points of the earth's surface. If photographs were taken of the moon's disk in England and America, and compared together and examined by a microscope, the dispute, we conceive, would soon be settled. In the meantime those who deny the moon's rotation, assert that the theory of its rotation in about 28 days, was invented to account for seeing the same face of the moon, from only one fixed point of the earth, and that in Europe.

Every observer of the moon has noticed that it always presents—very nearly—the same face towards us. This is accounted for by allowing her to make but one rotation on her axis, during her single revolution round the earth. But these periods are not exactly equal, for the time of the moon's revolution, is subject to small irregularities whereby we sometimes see a little more of one of its edges than usual either on the eastern or western sides of her equatorial regions. This is called the moon's *libration*, and is also claimed by those who dispute her axial rotation, as favorable to their view of the question. It would be an anomaly, however, in the motions of the bodies in our solar system if the moon possessed no axial rotation; therefore reasoning *a priori*, we would conclude it had such a motion. Deductions, however, must never be allowed to stand for facts in science, the soul of which is, correct observation.

New Polishing Powder.

Mix equal quantities in solution of oxalic acid and sulphate of iron, then dry the precipitate, calcine it, and use it in fine powder. It is superior to lixivated colcothar for polishing optical glasses, and fine metal work.

Electro-Chemical Baths.

An article on this subject by Prof. Vergnes—the inventor—will appear in our next number.