an operation of very great difficulty, if not of impossibility. The present improved mold renders the operation of making such lamps perfectly simple and easy. Drawings would be required to explain the parts.

Improved Saw Mill.—By R. Eickmeyer, of Yonkers, N. Y.—Consists in the employment of an expanding pulley constructed and arranged so that the speed of the carriage may be regulated as desired. Also in connecting the crank shaft which drives the saw with the shaft which drives the carriage, in such a manner that a variable speed is given the carriage to suit a variable speed in the saw. The saw moves quicker in its ascent than in its descent. The improvement is applicable either to vertical or inclined saws.

Improved Primer for Fire Arms—By Lieut. J. N. Ward, U.S.A.—In this invention the percussion hammer is made hollow, and the priming paper rolled up and placed within. Whenever the hammer is cocked the paper is fed out for a little distance and then cut off and exploded on the nipple by the descent of the hammer. We have carefully examined the improvement as applied to a U S. musket and regard it as one of a very practical character. It is certain in its operation, and the mechanism is simple. The improvement can be applied to all guns in use at a very small cost, without any alteration in the lock part, the only change being in the form of the hammer.

Improved Music Rack.—By Thomas Ward, of Birmingham, Huntington Co., Pa.—See engraving of this improvement on page 344 of our present volume, July 5, 1856. The inventor desires us to say that the tongues, G, should be quite short; not more than one-third as high as shown. F, instead of being a lamp support, is used to prevent sheet music from being thrown from the rack in turning the leaf, the end wire being passed down from the top along the middle of the sheet.

Notes on Patented Inventions.—No. 19.
[Concluded.]

Coloring Wood.—In June, 1844, a patent was granted to Charles F. Spicker, of New York City, for a method of coloring and hardening wood "by diffusing tannin and tannic acid, together with vegetable colors, throughout the whole structure of the wood, and incorporating the same therewith, by the aid of caustic potassa, or soda, and in varying the color afterwards by the use of metallic salts, whose base has an affinity for tannin." The application of this method to coloring manilla grass and other articles for cordage was also claimed.

A knowledge of coloring wood will, no doubt, be very useful to many persons. In the above described process there is nothing new to those acquainted with the art, excepting the use of caustic potassa, and this is not necessary.

Wood steeped for some days, or boiled for a few hours in a strong solution of logwood, then steeped for an hour in a weak warm solution of the sulphate of iron, will be colored black. By adding some sumac or oak bark to the logwood liquor, the color is slightly improved, and this is the practice with many persons who color wood. By using some chloride of tin, or alum, instead of the sulphate of iron, a purple color will be produced.

If wood is boiled in a strong solution of sumac and alum for two hours, then in a strong liquor of hypernic (or other common red wood for coloring fugitive red on cotton) for one hour, it will be colored a deep red.—A little metallic salts added, such as salts of tin, for about five minutes, after boiling in the hypernic, will highten the color; a small quantity of sulphate of iron will make it a deep crimson.

If wood is boiled for about an hour in a strong liquor of quercition bark containing a little alum or chloride of tin, it will be colored yellow.

A common method of coloring white wood an amber color is to rub over its surface with a sponge dipped in diluted nitric acid, then hold the wood over a clear fire for about two minutes. Beer made slightly sour with sulphuric acid will also color white wood yellow, if applied in the same manner as the dilute nitric acid.

Resinious pine wood cannot be colored by any of the processes described, it must be deprived of its resin before it will imbibe the coloring matter. Oak and hickory, and other woods, cannot be dyed bright colors; but, owing to the tannin they contain, are capable of being colored black with facility. Unresinous woods are the most favorable for receiving artificial colors.

Fire Bricks.—C. W. Fenton, of Vermont, was granted a patent for making fire brick in September, 1837. They were composed of kaolin clay and fine white sand, in equal parts, kneaded with water, molded, dried like common brick, and then fired at a high heat in the same manner. Bricks made of these materials were tested in furnaces, and stood the heat remarkably well. In many parts of our country such bricks may be manufactured with profit.

Not many years ago all our fire bricks were imported from abroad, but now excellent fire bricks are made at Perth Amboy, N. J.; they are made from fire-clay, which is found in the neighborhood. There is, no doubt, plenty of such clay in many parts of our country; it only requires to be mixed with about one half its bulk of sand, molded, dried, and burned at a high heat.

Floor-Scrubbing Machine.—Among the numerous machines patented to abridge domestic labor, such as washing machines, self-rocking cradles, knife scourers, apple parers, &c., some of which are excellent, and are in use, no machine for scrubbing floors has come into use, although several have been patented. One reason for this is, no doubt, owing to the complex motions required for the operation, thereby involving intricate machinery.

Washing Machines.—No less than 270 patents have been issued for such machines, thus showing that great attention has been devoted to their improvement, and yet how limited in practice. It shows one of two things, that improvements in such useful labor-saving machines have not been of the *right sort*, or that the ladies do not appreciate them—that they are not reformers in useful improvements.

With this article these "Notes on Patented Inventions" are concluded. With much that is curious a great deal of the useful has been presented. Of patented machines not a great deal could have been said intelligently without engravings, therefore the subjects chosen were mostly chemical in their nature, and were treated in a discursive and suggestive manner, to throw as much light on them as possible. We infer, from letters received by us, that they have attracted considerable attention, and have been read by many with interest.

American Association for the Advancement of Science.—No. 1.

This Association is now holding its tenth Annual Meeting, in Albany, N. Y.; it commenced on Wednesday the 20th inst. The President, James Hall, of Albany, who was elected at the meeting held in Providence, R. I., last year, called the Association to order at 10 1-2 o'clock, A. M., and Dr. Sprague opened the proceedings with prayers. Judge Parker, of Albany, in behalf of the local committee, then delivered a short address, welcoming the Association, for the second time in five years, to that city.

None of the eminent men of science from Europe, as was once expected, have been able to attend. Thirty-five passages, both ways, were secured for them across the Atlantic, but the committee, it seems, were unable to complete the arrangements before the month of June last, and the European *savans* could not make arrangements to be present on such a short notice,—all of them, however, gratefully responded to the invitations. The American Dons of Science, however, are present in strong array. Agassiz, Henry, Pierce, Horsford, Hare, Leidy, Rogers, Mitchell, Hitchcock, Wells, &c. &c., and a delegation from Canada, consisting of Prof. Smallwood, Sir Wm. Logan, and others. We shall give condensed reports of the most useful and interesting papers read without reference to their order, as that is of no importance.

Mind, Numbers and Form.—The first paper read was by Prof. Pierce, of Cambridge, Mass., the above subject, which he terms "Potential Arithmetic."

He had hesitated whether to introduce such a subject before the Association, not knowing whether it legitimately belonged to the advancement of science, but had finally decided that it was best to direct the attention of members to the subject. It was a part of a great field which he called Potential Physics—namely, the examination of power from an *a priori* point of view. The investigation of this question leads us to see that the world was framed by intellect, according to fundamental ideas which are the same as those of our own minds. Now this is the proper, legitimate work of science. Since the world was made by a Mind, according to the laws of mind, the pursuit of the knowledge of the mind will lead to a knowledge of the world. The law of numbers was first perceived to be one of the fundamental ideas of creation by Pythagoras. As Hay has shown, it was by a numerical combination of circles that Pythagoras made a human figure that no artist has equalled. And the same arrangement, by altering the numerical proportion, will change from an Apollo to a Venus, or to lower types of men, and even of animals. These investigations of Pythagoras will be revived. In like manner Greek architecture, vastly more beautiful than its imitations, was founded purely on numerical proportions. Pythagoras was mistaken only in supposing that number is the sole foundation of the universe. There are other prime ideas, such as those of Space and Time, also to be considered. He believed that by the combinations of the simple primary ideas of number, and of the consciousness of power, we should be led to laws similar to or identical with the laws of both organic and inorganic chemistry, and also to those of alternate generation in zoology.

Metereology.—Prof. Smallwood, of Canada, read a paper, upon the peculiar appearance of the atmosphere at Montreal, on the 23d day of May, 1856. An immense fire in the woods, about 250 miles from Montreal, at Pembroke, had sent up a cloud of ashes and burned leaves, which passed over Bytown, and afterward hung over Montreal, covering the entire sky with the exception of a strip in the horizon, cutting off the yellow rays of light, but not diminishing either the heat or actinism.

He added an account of a thunderstorm which followed this appearance of the cloud of ashes at an interval of about twelve hours; and also said he had discovered an invariable connection between the electric state of the air and the form of snow crystals, the crystals being more elaborate when the air was negative. This fact might possibly lead to something useful in electro-metallurgy.

He then passed to a description of a new anemometer, a modification of previous existing instruments, which records by a steel point on paper the velocity of wind in miles per hour, and the times at which the velocity changes, also the direction. It registers storms of 70 or 80 miles an hour, and gentle breezes of half a mile, and has been in use for twelve years without the need of repair.

Prof. Henry, paying a warm tribute to Prof. Smallwood's industry, accuracy and zeal, added that he had known an instance last winter of ashes and leaves being carried a thousand miles in the Mississippi Valley before falling to the earth.

Dr. Hare made some remarks on electric forces and the importance of paying more attention to the meteorological effects of electricity, and wished that some experiments might be made to determine the agency of conductive electricity in producing rain from fog.

Ammonia in the Atmosphere.—By Prof. Horsford, of Cambridge, Mass.—He stated that he had read a paper upon the subject before the New Haven meeting, and was now about to confess the errors of that paper, and to show how he had been led into them, namely, by using asbestos as an absorbent, which had not previously been freed from ammonia. On a re examination of the problem and repetition of the experiments, it was found that many new precautions and modifications were necessary in order to secure a more perfect accuracy; the exceeding delicacy of the measurements requiring more care than is usual in quantitative analysis. Eight determinations with this renewed care showed that a cubic meter contains from four to eleven-tenths of a millegramme of ammonia.

[A meter is 39·37023 English inches in length. A millegramme is only ·0154 of a grain. French measures are now employed by men of science.]

Dr. Hare then remarked upon the value of ammonia, and said that he who could devise a means of converting the nitrogen of the air into ammonia would do more than he who should discover the philosopher's stone. He expressed the hope that the new process of producing aluminum and sodium would lead to a mode of making cyanide of sodium which would readily yield ammonia for the use of farmers. He gave an account of his attempt to induce the Corporation of New York to use his processes for converting the night soil of the city in to manure.

Prof. Horsford, in reply to inquiries, said that he no longer thought there was any connection between the direction of the wind and the amount of ammonia in the air.

Pavements and Health.

Every city should endeavor to have its streets well paved, because health and pavements have an intimate relationship. In the city of Rome the utmost watchfulness is exercised respecting the pavement of the streets, because it has been found that maliarian fever is sure to visit every unpaved locality in it. In the city of Liverpool, England, narrow and unpaved streets in which the typhus fever used to rage the year round, were rendered healthy by paving—the fever disappearing with the entrance of the paving stones.

We are confident that any city having clean, well-paved streets and a plentiful supply of good water, is just as healthy, if not more so, than the majority of rural villages. Stagnant pools of water are the well known sources of miasma; paved streets carry off the surface water that would otherwise become stagnant in numerous nooks and hollows.

Many villages once afflicted with fever and ague have become free from it after their streets were graded and paved. We recommend this subject to the attention of all cities and villages troubled with malarian fevers; they will find it to be of vast importance to look well to the condition of their streets.

Trial of Reaping Machines in France.

At the recent Agricultural Congress held in Paris, it was announced that several prizes would be awarded to exhibitors of superior Reaping Machines. The trials for these prizes took place on the 2d inst. at Courcelles, in a large field of oats, divided into lots of twenty acres to each machine.

Seven machines were put upon trial, viz., two of McCormick's (one by M. Bella, of Grignon, and one by M. Laurent, of Paris); Hussey's, by M. W. Dray; Manny's, by M. Roberts; two of M. Mazier, (Orne); and a single-horse machine, by M. Simon, of Paris.

Of all these, three only accomplished their tasks—those of M. Dray, and M.M. Bella and Laurent. The others either stopped of themselves or were stopped in consequence of their defects.

The chief interest of the trial became concentrated upon McCormick's machines by the French makers, and Hussey's, by M. Dray; and it was to these that the prizes were awarded The first prize was not adjudged to any one, none of the machines exemplifying that degree of excellence for which alone, if attained, it was designed. Two second prizes, of 400 francs and a silver medal each, were awarded to M. Bella and Laurent, and a third, of 300 francs and a bronze medal, to M. Dray. The reason that the fourth prize, and not the third or second, was given to M. Dray was, that a greater number of laborers were employed in connection with his machine than with either of the others.

Bronze Powde

This is made of brass composed of 60 parts copper and 40 of zinc. It is reduced into powder and tinged various shades, by exposing it to different degrees of heat in an open pan over a fire.