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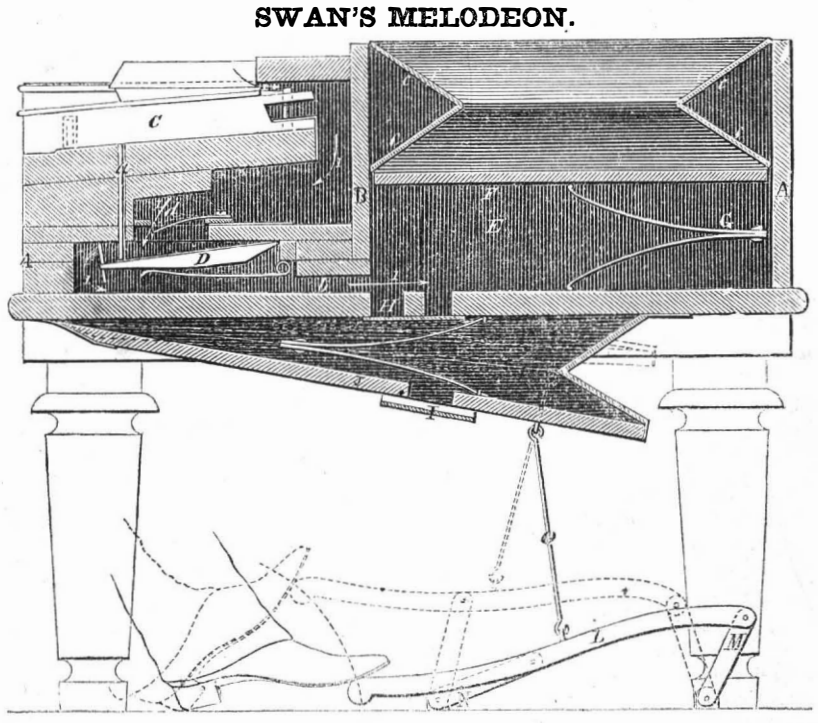
Improved Melodeon.

The annexed engraving is a transverse vertical section of a complete melodeon, showing the improvements, for which a patent was granted to the inventor, A. L. Swan, of Cherry Valley, N. Y, on the 9th of last March.—One improvement relates to the exhausting bellows, which causes a draught of air through the reed and consists of a new mode of constructing the air receiving box which is in connection with the exhausting bellows. Another improvement relates to a simple and convenient mode of working the bellows, by which the player can perform with more ease. By the first improvement, three desirable results are obtained, viz., the apparatus exhausts nearly double the quantity of air to that of the common exhausting apparatus, and occupies no more space; it also produces a peculiar strong bell tone; and it exhausts with equal pressure at all times, and sustains the power of a note as the apparatus remains exhausting.

A-A represents the case of the melodeon, in the front part of which, partitioned off by the board, B, running the length of the melodeon; the parts are arranged in the ordinary manner; C is one of the finger keys; it is shown pressed down upon the moveable vertical pin *a*, this acts upon the valve, D, which is shown open; *d* is one of the reeds; E is a back case or air receiving box of the instrument. Under the partition, B, there is a passage, *b*, leading to the valves and reeds; F is the top of this box, and is connected by wings, *c c*, to its upper edges all around. These wings all fold inwards towards the middle of the box, and are of such depth as to allow the top, F, to descend nearly to the bottom of the box; G is the spring for forcing up the top, F, and opening or expanding the inside of the box; H is the valve leading to the exhausting bellows which is the same as in other instruments, having a valve, I, in the lower section. The air is exhausted from the box, E, by the bellows, J, and when the valves, D, are opened, the external air rushing into the box in the direction of the arrows, 1 1, causes the vibration of the reeds, and produces the sounds. In the engraving the box is shown about half exhausted. The force of the spring is strongest when the box is nearly exhausted, and weakest when the top is raised and the box full of air. When the spring is strongest the top would rise quickest and cause the current of air to be the strongest, but this effect is counteracted by the pressure of the atmosphere upon the wings, *c c*, their tendency to close the box increases with the tendency of the spring to open it, and this tendency is greatest when the top, F, is lowered, and the box exhausted, and it decreases as the top rises and the box fills with air until when the box is full and the spring exhausted the pressure on the wings ceases. By this means the tendency of the top, F, to rise is always uniform, and the draft or current of air is always the same until the box is filled. It is this uniformity of draft which is so great a desideratum in instruments of this kind, and which is wanting in the ordinary exhausting apparatus of melodeons.

We will now describe the other improvement for working the bellows with more ease to the operator. L is a treddle jointed at the back end by a pin to a vibrating rod, M, attached to the floor below the instrument; it is also attached at about the middle of its length to a similar vibrating rod, N, which may be of the same length as M. A rod, O, connects the treddle to the lower section of the bellows. The spring inside of the bellows always raises the treddle to the position indicated by the dotted lines, until it is

SWAN'S MELODEON.

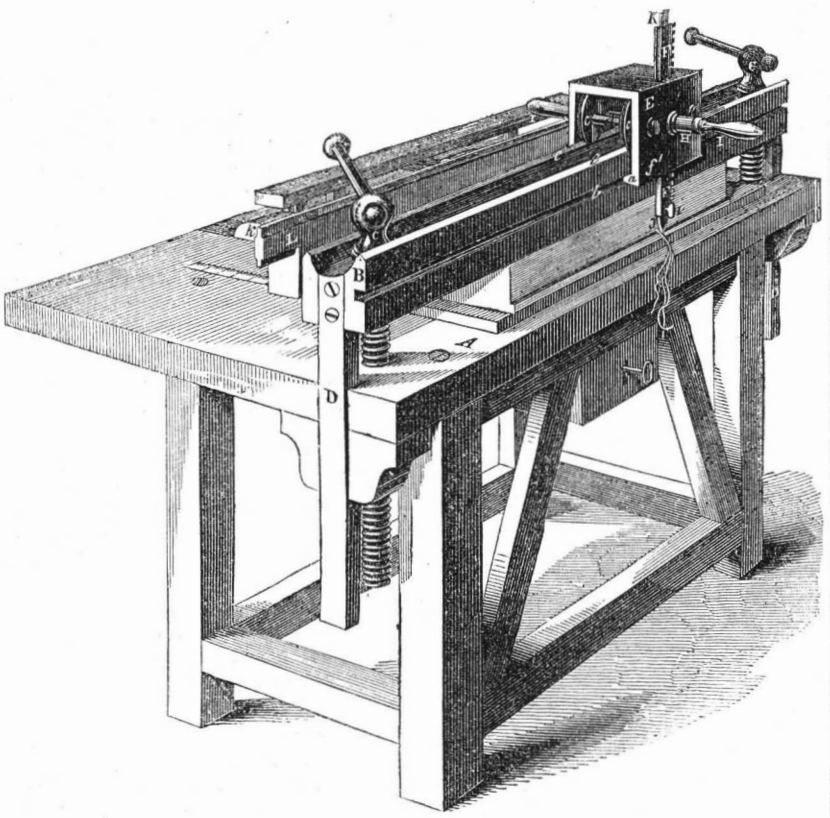


depressed by the foot. If the player places his heel on the floor at a suitable distance from the end of the treddle, and keeps up a gentle vibratory motion with his foot, the vibrating bars will be thrown back by the pressure and the treddle depressed so as to draw down the moveable section, J, of the bellows, the spring raising it every time the treddle is relieved of the foot pressure. In working a treddle hung in the ordinary way, the curve described by the end of the treddle and by the foot are in opposite directions, and the foot must slide along part of the treddle. A roller has been applied to the treddle to ease this motion and reduce the friction, but this is not considered a good plan. This improved mode of hanging the treddle causes the part upon which the foot rests to move in a curve in the same direction as the foot, and the foot remains nearly stationary upon it, the sliding of the foot being entirely obviated, and the necessity for the roller removed.

There are two claims in the patent, covering the improvements we have specified, viz., the uniform regulation of the draft of the bellows, and the mode of hanging the treddle.

More information may be obtained by letter addressed to the patentee at Cherry Valley.

PAPER CUTTING MACHINE.



The annexed engraving is a perspective view of a machine for cutting paper, pasteboard, &c., for which a patent was granted on the 19th of last July (1853) to H. J. Oerter, of Bethlehem, Pa. The nature of the improvement consists in having an adjustable knife or cutter placed within a sliding stock, and so arranged that the knife or cutter may be regulated to cut the required depth, by merely turning the handles by which the sliding stock is moved upon the bed.

A is a table, and B is a bed-piece placed on the top of it; C C are screws passing through the platform and the bed-piece. By adjusting these set screws, the bed-piece may be placed the requisite distance above the table. D D are guides attached to the ends of the bed piece working in recesses at the ends of the table. These guides steady the bed piece when it is raised or lowered; E is the sliding stock which works on the bed piece. On the side *f*, of the stock, inside, there is a projection, *a*, which fits in a recess, *b*, in the bed piece. The stock is also provided with four rollers, *c c* (two not seen) hung on two small shafts, *d d*, (one not shown.) These rollers run on two thin projecting rails, *e e*; F is a vertical rack bar which works between cleats inside of the box. This rack-bar meshes into a pinion inside of the sliding stock, and hung on shaft, H, to the ends of which shaft the two handles, I I, are attached; J is the cutter which is attached at the lower end of the rack bar, F, to the foot of the bar, K, which fits in a groove in the rack bar by a set screw, *i*. By this arrangement the cutter can be raised or lowered while working in a very simple manner, by simply turning the handles, I, which makes the pinion on shaft, H, elevate the cutter rack bar, F; L is a gauge placed on the top of the table. This gauge has set screws which pass through projections, K K. The said screws pass through the slots, *l l*, in the table, so that this gauge can be set parallel with the ped piece, B, or obliquely to it by the set screws.

Operation.—The paper to be cut is placed on the top of the table, A, against the gauge, L, underneath the bed piece, B. The gauge is set in such a manner that the paper may be cut the desired width, and parallel or obliquely with the bed piece. The operator then works the sliding cutter stock by the handles, and cuts the paper by moving the stock back and forth. The cutter is lowered as the pile is cut down by the operator turning the handles, so as to depress the rack bar, in which the cutter is secured.

The inventor of this simple improvement on paper and pasteboard cutting machines, is Frederick Hesse, who assigned all his right, title, and interest to Mr. Oerter, to whom the patent was issued. This machine is principally used in bookbinderies, and may be used for other purposes than trimming books and cutting paper.

More information may be obtained by letter addressed to Mr. Oerter.

Transparent Soap.

A concentrated solution of soap in water becomes partially opaque on cooling, by the formation of crystals; this, however, is not the case with a similarly concentrated alcoholic solution. This fact is applied to the manufacture of transparent soaps, the preparation of which was formerly kept a profound secret. In preparing soap of this description, ordinary soap is thoroughly dried in a stove, and dissolved in hot alcohol. All foreign matters not consisting of soap will remain undissolved, and must be removed in this case, with so much the more care, because they cannot remain concealed by an opaque mass as in ordinary soap. They are removed by deposition, or by a filter supported by a funnel, surrounded on the outside with hot water. The alcohol is then separated from the solution by distillation, until the residue is capable of forming a solid mass, when cooled in the metallic moulds. Transparent soap of this kind is generally too hard, and affords a lather with great difficulty.

THE CRYSTAL PALACE

GENERAL REMARKS—Nothing of special interest has been added to the Exhibition during the past week, and the improvements are going on most wretchedly slow. The paintings are on the floor, and most of the machinery is all hurly-burly. Mr. Holmes will please hurry up his department—the readers of the "Scientific American" are anxiously waiting to examine it; they won't come until the belts, pulleys, cog-wheels and shafts are all in stirring order. By some time in September, as we have said before, all things may be put to rights. The number of visiters is daily increasing, and the Association must be getting quite good-natured over the fairer prospect. There is a loud complaint however about the cost of cold water (3 cents a glass) and other refreshments. If our readers do not wish to be swindled out of four or five shillings for a tolerable dinner, they must be their own stewards when they visit the Palace.

The English Department has still many an aching void: there is room enough to display twice as much as is now arranged. But amends are made, perhaps, in the quality of what we have—it is generally of the real substantial and useful. The glory of the Swiss quarter, as might be expected, are the watches and jewelry; Geneva, for centuries, has been the center of these manufactures, and the display in the Palace will satisfy all expectation. There are watches of all the fashionable styles, sizes, and prices. The little watches the size of a gold dollar, set in bracelets, memorandum books, and port-monnaies, attract universal admiration and wonderment.

Arrangements have been made for opening the Palace in the evening.

The Sevres porcelain has been arranged but too late for notice this week.

THE SCIENTIFIC AMERICAN AND THE EXHIBITION.—We wish to remind our careful readers, who intend to visit the Exhibition, (if they have not thought of it before), that they are better qualified than any other class of persons to appreciate justly what they may see. The ready and practical judgment which is habitual in their trades, will enable them here easily to distinguish the wheat from the chaff. And they are posted up so well in the improvements in the arts and sciences, that nothing will take them by surprise. There will be no great mystery or novelty for them, unless it be the millinery and other finery. In the machine room they will meet many familiar acquaintances. They will be surprised at the number of machines they have seen described and illustrated in the Scientific American. Indeed, we doubt if there will be a better commentary on the useful features of the Exhibition, than the eight volumes of our paper.

THE GOBELIN TAPESTRIES.—The Gobelin Tapestries excite a great deal of attention from those who know what they are. Others, supposing them to be only paintings, pass them by; this may be a compliment, but even in this way they merit a higher, for there are many paintings in the Palace which are mere daubs in comparison. If the tapestries were hung among the paintings in the gallery, they would suffer little by a comparison with the best.

There are thirteen specimens of these tapestries, of different sizes and shapes, displayed in a neat little space prepared for them on the lower floor in the French Department. We understand that, at the closing of the Exhibition, they are destined to adorn the President's White House, as a gift from Louis Napoleon.

But the tapestries are only cloth—not woven by machinery, but slowly knitted by a process similar to the crochet-working so popular at present with the ladies. The workman, sitting, with the design on one side and the warp fixed in a vertical frame on the other, toils for years in producing a tapestry of but a few feet square. The largest pieces cost a labor of seven to ten years, and are estimated to be worth from fifteen to thirty thousand dollars. The manufactory is at Paris in the Fauburg St. Marcel. In the year 1453 Giles and John Gobelin, celebrated dyers of that time, erected the building in which the tapestries are now made. But the dyers, although their name is immortal, seem to have failed in their enterprise, for the building was popularly known as the "Gobelin Folly," till Louis XIV., in 1667, by an edict, dignified it with the title of the "Hotel des Gobelins," and established in it a manufactory of furniture and decorations for his new palaces. The establishment has been continued under exclusive royal patronage and control to the present day. The best artistic talent has always been employed, and their work has been unrivalled. The number of workmen at present is about 120, receiving from $300 to $500 per annum, and a pension of half that sum when disabled by age.

CHEMICALS AND PHILOSOPHICAL APPARATUS—The show of drugs and chemicals in the exhibition is quite interesting and complete. Most of the common or new, useful, or curious substances employed in medicine or the arts, may be found here. There is also a fine display of chemical and philosophical apparatus, chiefly from Germany and the United States. But the foreign apparatus cannot compare with the American in neatness of finish and appropriateness of form. The American Air Pump, exhibited by Chamberlain, of Boston, is a model for such an instrument, and is a fair specimen of the American style for the best apparatus. Much of the chemical glass ware in the Austrian and German quarters is quite awkward in form, but has the great advantage of being made of the genuine Bohemian glass.

ARTIFICIAL FRUIT ESSENCES—These essences have rapidly come into use, chiefly as flavors for confectionary and liquors: the most common are of pine-apple and banana. Although called fruit-essences or extracts, there is no fruit about them or used in their preparation, but strange enough, the most delicious flavor or perfume may be produced by a simple chemical process, from some of the most loathsome substances. Thus the essence of pine-apples is manufactured from a mixture of putrid cheese, sour milk, and sugar: for most of the other essences a very disgusting and poisonous oil, obtained in the distillation of potatoes, is used. But when the essences are well prepared and pure, they are as harmless as the natural flavors which they imitate, indeed some of them are perfectly identical in their properties and composition. Gehe & Co., of Dresden, Saxony, exhibit a fine assortment of these wonderful products of modern chemistry among their large collection of drugs and chemicals.

PRESERVED FOOD—In the French Department there are sixteen exhibitors of preserved meats and vegetables. The fruits put up in clear glass bottles seem as fresh as if they were just taken from the trees—and we have no doubt that the meats are as palatable as when they were enclosed in their tin cases. Chevalier Appert, of Paris, exhibits preserved roasted and stuffed mutton, and other alimentary preserves. This collection will perhaps receive the greatest attention, from the fact that Appert's name is generally connected with most of the processes. As early as 1810, he had become famous for his success in preserving vegetables and meats. The improved processes have borne the test of time and changes of climates. And now, if we can only pay for it, we may have a dinner off of anything we please, at any season we please. It is only necessary to exclude the food entirely from the air, and it may be kept for our grandchildren. It may seem a simple problem to exclude the air, but there are many difficulties. Air enters into all the minute pores of a body, sticks to the outside, and surrounds it. The most approved plan is to remove the bones, and heat the meat in a tin canister by means of a chloride of calcium bath at a temperature of about 300 degrees. When the air is removed from the interior of the meat, and the vacant space filled with steam, the canister is carefully closed up by soldering. When the canister and its contents become cold, and the steam condensed, the sides of the can will be hollowed in by the pressure of the atmosphere. This is a sign that the whole process has been performed successfully.

MOSAIC WORK—Rome and Florence send beautiful articles of mosaic work, and specimens of the stones which are used. The most interesting object in this collection is a mosaic center-table, estimated to be worth over $3,000. The top of the table upon which the design is worked is black marble. At a little distance the design has the appearance of a superb painting. But each color and each shade of color is reflected from separate bits or slices of stone only the sixteenth of an inch in thickness. Mosaic working is very slow and tedious, and requires the patience of a Chinaman. It will never be practiced in America unless some Yankee invents a machine to do it by wholesale.

SUBSTITUTE FOR THE TURN-TABLE—Joseph Dunn, of Durham, England, exhibits a model of railroad track, car, and switches, for reversing locomotives. Two tracks, branching out from the main track, at suitable distances from each other, meet in a single track, the length of the locomotive. The car passes out by one track and returns by the other reversed. The switches are placed near each other so that they may be operated by a single man, and are kept open for the main track by springs, except when the reversing is made. This plan is new to many of our readers, and will readily recommend itself for simplicity and cheapness.

GRAIN MOISTENER.—U. Debaune exhibits in the French quarter a very simple and effectual machine for thoroughly moistening grain. The proprietor describes it as "a sort of a double rectangular watering pot." The principle will be readily understood. The grain in its passage along an inclined channel is sprinkled by little jets of water issuing from the sides of the channel. These jets are fed from a source or reservoir placed at a suitable distance above for the pressure. It will be seen that the amount of water may easily be regulated for the amount and kind of grain. The inventor says that by the machine one man can moisten the grain to feed ten pairs of millstones.

WHITWORTH'S MEASURING MACHINE.—A millionth of an inch is a very small space—you cannot see it with the eye or feel it with the touch. A keen razor edge, or the thinnest paper is thick in comparison with such a space. The Scientific American is printed on tolerably thin paper, but it is over 3,000 times thicker than the millionth of an inch. A million leaves of our paper would make a pile more than 250 feet high. A measure true to the hundredth part of an inch is rare, and the space of a thousandth of an inch could not be accurately measured by any device hitherto in use. But Mr. Whitworth exhibits, in the English Department, a very modest looking little apparatus which can determine easily the one-millionth of an inch. The use of such an instrument is chiefly for copying or regulating the standards of weights and measures, and in the construction of delicate philosophical instruments. The principle of this curious contrivance will be readily understood from a brief description. Two steel bars are placed in a cast-iron block, and are made to approach or recede from each other by means of screws moving accurately in their axes. The screw which moves one of the bars (the other being supposed stationary for the simplicity of the explanation) has 20 threads to the inch. On the head of this screw is a wheel with 200 teeth. Hence a motion of one space on the wheel would advance the bar 1-4,000 of an inch. An endless screw, which moves the wheel, has upon it a circle graduated with 250 divisions. One division of the graduated circle will therefore correspond with 1-250th of one of the wheel divisions, or to an advance of the bar of (1-250×1-4,000) one millionth of an inch.

BOLTING MILL AND PATENT BOLTING CLOTH—This machine is exhibited chiefly to show the properties of the bolting cloth. The cloth, woven without seams, is stretched over a reel which turns on an inclined axis, at the rate of about 150 revolutions in a minute. The meal falls into the upper part of the cloth, which, in passing round, strikes against six bars of wood, called beaters. By this means the flour is made to pass through the meshes of the cloth, while the refuse escapes at the lower end. It is said that this method of bolting has been in use a long time in England and her colonies. It is recommended for despatch and precision in dressing, and on account of the bolting mill requiring but little space and power. The proprietor says that 1400 lbs. in the hour are dressed in this way, and 430,000 lbs. before the cloth is worn out. This machine is exhibited by Walter Blackmore, of Wandsworth, England.

BARLOW'S PLANETARIUM—We intended to present our readers with an engraving of the planetarium which we noticed two weeks since; but it was found that no engraving could give a correct notion of the complicated machinery. Its general appearance, however, will be readily understood from a few words of description. The instrument stands in a circle about 9 feet in diameter and 3 feet high. At the center of the circle, the sun is represented by a brass sphere 16 inches in diameter, around which Mercury, Venus, the Earth, and Moon, are arranged in proper order and position. The diameter of the ball representing the earth is 4 inches. The other planets are represented by globes of diameters corresponding with this.

ELECTROTYPES—In the English Department is a large collection of electrotyped specimens which well show the condition and capabilities of this new art. The Exhibitors are Elkington and Mason, of Birmingham, who are proprietors of the largest electrotype establishment in the world: nearly 1,000 workmen are employed. The articles exhibited are electro-gilded and plated vases, candelabra, table-sets, &c. Of course they have the appearance of real gold and silver, and the decoration is quite equal, in artistic merit, to any thing of the kind in the Exhibition. The metal which forms the foundation or mass of these specimens is not copper, which was at first used, but an alloy called albata ware, composed of copper, nickel, and zinc, and so closely resembling silver in appearance, that if the plating be worn off, the article will not be disfigured.

But the most interesting part of this collection are the electrotypes of insects, flowers, and fruits: the objects are enveloped with a coat of bright metal, which copies and preserves their minutest peculiarities. We are surprised that so little attention has been paid to this branch of electrotyping in the United States. The manipulations are quite simple, and may be performed by any person of ordinary skill—and the curious results will well repay the expense and labor; anything, of whatever size or shape, can be covered with metal or accurately copied.

In a collection of charts, instruments, &c., exhibited by the United States Coast Survey, are some fine specimens from Mr. Mathiot's electrotype laboratory at Washington. They consist of the original plates, as produced by the engraver, the electrotype moulds, and the duplicate electrotype copies or fac-similes of the originals. These last are so perfect that the engraver could not distinguish them from his own work, and a microscope will reveal similarities that cannot be detected with the unassisted eye. The largest set of plates are 42 by 38 inches—making a surface of about 10 square feet. The engraving of such a plate requires the labor of skillful artists for several years, but Mr. Mathiot reproduces it in two or three days.

The Electrotype has been practiced with the greatest success by Mr. Mathiot, and to him we are indebted for some of the most valuable improvements and applications. The discovery of the use of iodine in copying metallic objects, ranks him among the most useful men of the age. The multiplication of engraved copper plates is now one of the most certain of the electrotype processes. Mr. Mathiot is also the author of the best practical treatise on electrotyping extant, which was published in Vol. 6, of the Scientific American.

Electro gilding and plating are now practiced in almost every village; some of the old processes of washing, amalgamating and plating by heat are fast going out of use. Copying wood engravings and types as a substitute for stereotyping and coppering the faces of types by electrotype are carried on quite extensively.

American Association for the Advancement of Science.

[Continued from page 398.]

EFFECTS OF CHLOROFOM.—The following is an abstract of an able paper read on this subject by Prof. Horsford, of Cambridge, Mass.

"The occasional deaths that have occurred in medical practice from the use of anæsthetic agents have, within the last two years, attracted a large measure of attention. It was earnestly maintained by some in this country that ether had been employed in all cases without injurious effects, and that the disastrous consequences were solely due to chloroform; while in England the two agents were held in the inverse order of esteem. Others in this country advocated the use of chloric ether, while it was generally believed by those who had most to do with these agents that the fatal results were due to idiosyncracies of temperament on the part of the patient, or in rare cases to want of attention and judgment on the part of the physician. There has been expressed an opinion that the injurious effects of chloroform are due to a volatile body accompanying the chloroform, and derived from the action of bleaching salt upon fusil oil—a constituent of most interior alcohols. It was conceived that this body need be present only in a very small quantity to produce the fatal effects.

It was maintained by others that chloroform was susceptible of undergoing spontaneous change and becoming thereby unsafe for respiration.

In the midst of this variety of explanations of the ill-effects of anæsthetic agents, there appeared in the market from time to time chloroform impossible to inhale from the presence of free chlorine and hydrochloric acid; and another which, though not difficult to inhale, was found upon close examination to yield an offensive and unusual odor, as of something putrid. The latter may be easily purified by repeated agitation with sulphuric acid, and was the subject of experiment by Gregory, to whom we are indebted for the method of its purification. The former variety had not hitherto been the subject of special experimental inquiry.

The following investigation was undertaken with a view to determine the nature of this variety of bad chloroform:—

The sample of bad chloroform was contained in a ground stoppered bottle, and was not quite full. The space above the liquid, and the liquid itself presented a yellowish-green tinge. Floating upon the surface of the chloroform was a thin layer of deep yellow color of oleaginous consistency, which, when the vessel was agitated, separated into globules, as oil would agitated with water. Upon opening the flask, it yielded a strong odor of chlorine and hydrochloric acid.

A quantity of this bad chloroform placed in an inverted test tube over mercury, yielded more and more gaseous products at first of a decidedly greenish tinge, but becoming in a few days colorless. As might have been expected, chlorine and hydrochloric acid could be entirely withdrawn by distilation with soda and lime. A quantity so purified nine months since, is now perfectly good.

Another quantity in contact with cotton fibre (candle wick) in a few days became perfectly pure, and has so remained.

A better, and a thoroughly practical and simple method was discovered by the late Dr. Dwight, of Moscow, N. Y., namely, by agitation with a little alcohol.

Experiments made with alcohol to which was added impure methyl alcohol, (wood spirit) gave good chloroform.

Experiments with the product of distillation resulting from the mixture of pure fusil oil, water, and bleaching salt, upon man and inferior animals, were made under quite varied circumstances.

A practicing physician accustomed to the administration of chloroform, inhaled the vapor of this product for fourteen minutes, without any marked anæsthetic effect or any other effect than slight irritation of the bronchial tubes.

Two rats, one full grown, were successively subjected to the action of this agent, poured upon cotton to facilitate evaporation, the tuft of cotton and the animal being placed on the bottom of a covered becker glass. The air was renewed from time to time with the aid of a bellows. At the end of an hour no anæsthetic effect had been produced upon the full grown rat, and at the end of forty minutes none of the smaller animal. They were then exposed to the action of the vapor of chloroform, and in less than two minutes were insensible.

The experiment was repeated with kittens about a week old, with like results, except that they were longer in becoming insensible.

These experiments led to the conviction that fusil oil, when treated as in the manufacture of chloroform, substituting fusil oil for alcohol, is not changed, and of course that the fusil oil present in alcohol in the ordinary manufacture of chloroform, does not yield a poison, which, taken with the chloroform, has produced the fatal effects.

This opinion, our readers will perceive, is different from that described in previous numbers of the Scientific American, where the experiments of Dr. Jackson are detailed, as showing that fusil oil in some samples of chloroform was the cause of its fatality to human life. Dr. Simpson, of Edinburgh, held the same opinion. A series of important experiments were made by Dr. Gould, of the Lawrence Scientific School, which together with those of Prof. Horsford, have led them to adopt the following conclusions:—

1st. That good chloroform does not spontaneously change in a period of nine months.

2nd. That the bad chloroform, containing free chlorine and hydrochloric acid, may be produced by using a bleaching salt of great strength with a quantity of alcohol disproportionately small.

3rd. That the bad chloroform may be produced by receiving the distillate into water, so as immediately to withdraw the alcohol from the chloroform.

4th. That the bad chloroform may be produced by passing chlorine directly into chloroform.

5th. That no formula for its manufacture can be relied upon as a guide, since bleaching salts vary in strength when derived from different factories, and vary with age. In the foregoing experiments the range is from 15 to 30 per cent.

6th. That quick lime added to the mixture does not promote the economy of manufacture.

7th. That the chlorine and hydrochloric acid of bad chloroform, as observed by Dr. Dwight, may be removed by agitation with a little alcohol.

8th. That the ill effects observed in the administration of chloroform are not due to the presence of chlorine, as the irritation is such when it is attempted to inhale it, as to prevent inhalation altogether.

9th. That the ill effects are not due to any poisonous product arising from the action of bleaching salt on the small quantity of fusil oil, in the alcohol employed in the manufacture of chloroform.

10th. That the ill effects are due to peculiarities of constitution or temperament of some patients, and in a few cases to want of attention or judgement on the part of the person administering it.

These experiments and opinions will no doubt lead to still further investigations.

EVAPORATION OF FLUIDS—STEAM BOILER EXPLOSIONS.—The following is an abstract of an exceedingly able and interesting paper by Lieut. E. B. Hunt, U. S. N.:—

"If we study the phenomena attending the condensation of gases and vapors into fluids, it is apparent that while contigious molecules are still at distances many times as great as that characterizing the fluid state, the cohesive attraction manifests itself appreciably.—Steam instantly condensing, at the rate of a foot of steam to an inch of water, shows that in water the cohesive action of a molecule extends effectively through a sphere whose diameter is at least twelve times the distance between adjacent molecular centres in the fluid. Hence in water the radius of effective cohesive action must be so great as to include several molecular layers. The moment a gas ceases to follow Marriotte's law, cohesive action becomes appreciable, and this is proof enough that in masses many layers contribute their action in making up the total cohesion.

Fluid surfaces are in a state of weak cohesion as compared with fluid interiors; hence a partially atmospheric condition of rarifaction exists along such bounding surfaces. If then, we assimilate heat to a molecular repulsion, as is customary, we see at once that as the temperature is raised, the weak cohesion in the surface layer will be wholly overcome long before the mass is heated to that point which will overmaster its internal cohesion. Hence the surface molecules will freely pass off as vapor, while a strong cohesion still exists throughout the entire mass. Evaporation thus goes on at surfaces, at all temperatures above that which just suffices to overcome the weak surface cohesion. This constitution or structure necessarily characterizing the limiting layers of fluids, is the true and full explanation of evaporation in all its forms.—From this we see that a fluid mass, without interior or exterior surfaces, or so enclosed as virtually to answer this description, might be heated up far above the boiling point without boiling. We see that ebulition is but the effect of an internal evaporation starting in minute air bubbles, and growing with the expanding bubble.

EXPLOSIONS.—The condition requisite for ebulition in boiling water, is simply that air bubbles in the heated portions, shall present on their boundaries the weakly coherent surfaces, requisite for evaporation to be established. Perfectly de-airiated water, with a limited surface, would not boil at all, but would steadily heat up until it reached that point at which it would flash explosively into steam. Now, one chief cause of steamboat explosions is clearly of this description. The boat stops at a wharf; the doctor or pump supplying water to the engine, being worked by the engine itself, stops the water supply when the engine stops. The water in the boiler goes on boiling until all the air bubbles are boiled off from the water, and their air is mixed with the steam above. There then ceases to be any evaporating surface, except that on the top layer, which is farthest from the heating surface, and quite inadequate to the consumption of all the heat supplied. Then the mass of water begins to heat up, and it goes on storing up the unconsumed caloric, until the water is far hotter than the head of steam would indicate. The engineer then starts the engine; this starts the pump, which throws a stream of air charged with water directly into the glowing fluid. The heat instantly finds its outlet by an overwhelming evaporation on the newly supplied bubble surfaces, and a tumultuous ebulition follows. The gathered store of heat flashes off a portion of the water into steam of excessive tension—a tension such as nothing can withstand. The terrific consequences are too often witnessed in these fatal catastropes which have given to our Western rivers such a tragic reputation. No one can examine a list of Western steamboat explosions without being impressed with the frequency of these accidents just as the boat is starting from the wharf, after a landing. It seems to me beyond doubt that many of these occur just in the manner now stated, and from the deficiency of air bubbles in the boiler. We see in this reasoning too, a sufficient explanation of dry steam, or steam hotter than its tension indicates. The heating is then going on faster than the evaporation, and the steam is thus heated as if it were not in contact with the water, or were in a vessel by itself.

It is not always that the remedy for a danger is as obvious and as easily applied as in this case. It is only necessary to keep the pump in steady, slow operation, while the engine is at rest. It should always be capable of an independent movement, and should constantly, while a boat is fired up, be kept at work, however slowly. By this means air for ebulition will always be supplied, and the accumulation of heat in a sluggish mass of water cannot then go on until the explosive point is reached.

The explanation of evaporation which has been given shows that for each fluid the formation of vapor lies within certain definite limits of temperature, as a result of primary structure. These limits differ greatly in different fluids. Now, in framing the earth for habitation, or for the proper life of animal and vegetable forms, something equivalent to rain was necessary, from the constant descent of fluids to the lowest level. Without some agency to lift the great organic fluid above its lowest ocean bed, sterility would have been the lot of all which rose above its surface, and terrestrial organisms would have been quite impossible. But fluidity does not involve evaporation except within certain definite limits, special for each liquid. Again, evaporation might freely go on, and yet no capacity for condensation exist except within other limits of temperature, quite unattainable, save through special arrangement. Rain, then, with our earth and atmosphere, involved a special constitution of the raining fluid, not only so that evaporation at ordinary temperatures should go on, but so that condensation may again take place in the ordinary air. Not only must this qualitative arrangement exist, but also a quantitative one. Since the quantity of rain best sufficing to the aggregate organic need is exactly a certain definite number of inches per annum. Now, water is doubtless the only known liquid which could by possibility answer these definite mechanical conditions; hence we say, that there is a peculiarly clear evidence of design, first, in making a fluid which could, under our cosmical conditions, undergo the raining round, and secondly, in its being on the earth in so exactly the quantity best meeting the aggregate organic needs. Ether, quicksilver, or any other known fluid, could not, in any possible arrangement of quantity, supply this primary cosmical necessity. Now, when we reflect how many are the instances in which the terrestrial elements, simple and in combination, exist in strict adaptation to organic needs, both qualitatively and quantitatively, there is cumulative evidence of design furnished by a locomotive or cotton mill. Not only is organic life framed in strict relation to the earth, but the earth is also primarily constituted in strict relation to organic life. Let whoever doubts this study the extremely a-priori chance that a drop of rain of any liquid should ever fall upon the earth, and let him but picture the total lack of all land life which must have followed any cast of the die other than that really existing. Life without fluid circulation is totally inconceivable by the mind of man, and exactly to determine the appropriate kind and quantity of liquid, as has been done in the real frame of nature, was a problem of pure and absolute intellection, transcending the grasp of every mind save the All-Wise Creating Designer.

BAROMETER FOR NAVIGATING THE AMERICAN LAKES.—Dr. W. C. Redfield, of this city, read an interesting paper on the use of the Barometer for navigating our great inland lakes. He founded his remarks on the law of rotation in storms or cyclones.

"When a storm exhibits an easterly wind on the Atlantic Coast, the direct force of this wind seldom extends to the great Lakes.—Every great storm, when viewed in its geographical extent; is found to comprise a great cyclone, or eddying circuit of wind, which, on its first approach, in these latitudes, presents the wind from an eastern or southern quarter of the horizon, attended and sometimes preceded by a fall of the barometer, both of these phenomena being due to the northeastwardly progress of the cyclone and its turning motion, leftwise, around its own axis of rotation.—These first winds of the cyclone are often quite moderate, or even gentle, as compared with the succeeding westerly winds, which are to be experienced in the due course of rotative progression.

The navigator should carefully note that when, in the progress of the storm, the barometer has ceased to fall, the central portion of the cyclone has arrived or is nearly opposite his position, and that the local change of the storm-wind to the westward is soon to follow, being preceded, generally, by the first rising of the barometer. It is this period which constitutes the most dangerous crisis of the storm, of which the barometer affords warning. When afterwards the barometer has risen to its usual elevation, it affords evidence that the body of the stormy cyclone has mostly passed over. The navigator will perceive that all his precautionery measures should be taken during the fall of the barometer; and that in proportion as this fall takes place, the crisis of the storm becomes nearer to him, and its violence the more certain.

NEW INVENTIONS.

Electrical Illumination.

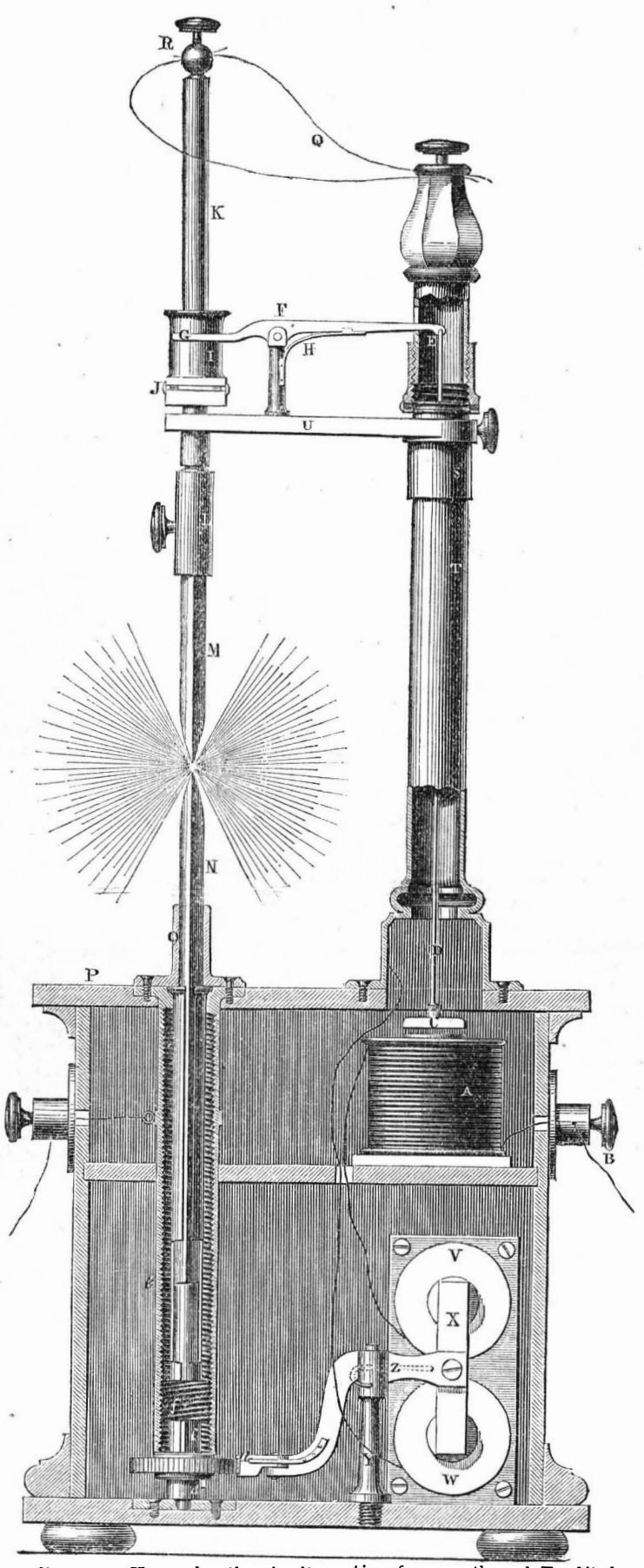
On the first of November, 1852, a patent was granted to Dr. Joseph J, W. Watson and Thomas Slater, an ingenious mechanic of London, for improvements in galvanic batterias for producing electrical illumination, and for the manner of producing valuable chemical products by the said batteries. As the English patents are not enrolled for six months after they are granted, it was not until the first of last June that the full specification was made out. Wonderful statements respecting the value of the improvements found their way from time to time in the papers, and some of these are noticed in our columns. More recently Dr. Watson has published a splendid book on the subject in London, one that greatly reminds a person of the old illuminated manuscripts, with its blue and red initial words to its paragraphs. This is to carry out the description of the invention, in uniformity with its nature, which is the production of pigments of various colors in the batteries, which are employed to produce the electric currents.

The annexed engraving is a side elevation, in section, of Dr. Watson's electric lamp, arranged for the table and domestic use.

In this lamp an electro-magnet, A, is fixed in the base, and rendered magnetic by a wire which enters at B—the other end of the coil of the magnet being in connection with the lamp's base. The armature, C, of the magnet is attached to the lower end of the rod, D, which again is connected at its upper end with the longer arm, E, of an overhead lever. This lever works on a fixed center, F, and its opposite arm terminates in a fork, G, whilst a slight blade-spring, H, serves to keep the end, E, of the lever constantly elevated when the magnet is not in action. The fork, G, embraces a collar, I, consisting of two semi-cylindrical pieces of brass, hinged to each other at their base, J, and made to grasp the vertical spindle, K, by the ascending action of the fork upon the conical sides of the collar. The spindle, K, is fitted with a socket, L, in which is a tightened screw for holding the upper electrode, M; whilst the lower electrode, N, is inserted in the stationary socket, O, on the base beneath. This socket is fitted into the top of the main stand, P, which also carries a binding screw, for connection with one pole of the battery. The dark parts of the figure represent the insulated points of the apparatus. Two flexible wires, Q, connect the top of the lamp with the upper electrode, through the binding screw, R, in the top of the spindle, K, and this completes the battery connection, as far as regards the actual light apparatus.

As the correct working of the lamp depends on the adjustment of the arc, or striking distance between the poles, Dr. Watson has introduced the apparatus indicated at S, consisting of a collar piece, or boss, capable of turning round on a shoulder on the upper portion of the pillar, T, through which pillar the rod, D, of the armature, C, is passed. This boss is formed internally with a screw-thread working upon a corresponding thread on a tubular piece within, so that, on turning the boss, the screw action elevates the tube, and the latter carries up the bracket, U, and with it the lever, E G. Thus, by turning this boss, S, in either direction, the armature, C, suspended from the lever, is made to approach to, or recede from, the poles, and thus diminish or increase the inductive power; and the portion of the pillar above the boss being slotted, to allow the lever to pass through, the lever's play is restrained within certain determined limits. The action of the lower pole of the lamp is this:—The current which induces the magnetic power in the magnet, A, also brings into action the electro-magnet, V W, before it passes to the general body of the lamp. The electro-magnet, W, attracts the armature, X, which is attached to a curved lever, capable of horizontal motion to the stud pillar, Y, but restrained from connection with the magnet, whilst induction is not going on, by the spring, Z. At the opposite end of this bent lever is a spring-catch, *a*, gearing with a ratchet-wheel, *b*, which it turns, on being acted upon by the magnetic induction. This ratchet-wheel, *b*, is fast on the end of a slotted tubular piece, *c*, which works in a footstep, *d*, in the base of the stand. This tubular piec ec, passes up the centre of the fized external tube, *e*, which has an internal screw-thread upon it, and is therefore, in reality, a long nut. In this nut is fitted the short externally screwed piece, *f*, which is entered upon the tubular spindle, *c*, and connected with it by a feather projecting into its groove. In this way, as the ratchet, *b*, is turned, the short screw, *f*, is compelled to traverse along its internal screw-thread, and a propeller piece, *g*, on the front of the screw, *f*, pushes forward the electrode, N, through the tube, *c*, in which it is entered, and through the socket, O.

Thus the action resulting from the magnetic operation of the magnet, A, induces a similar consequence in the action of the magnet, W, with the exception that, in the latter case, the movement is an ascending, instead of



a descending one. Hence, by the simultaneous action of both poles, the center of the light is constantly kept at the same level, so that it will unvaryingly correspond with the focal line of a reflector. In the light-action of the lamp itself, the electric current, in passing through the magnet, A, attracts the armature, B, thereby drawing down the end, E, of the over-head lever, and elevating the collar, I, and spindle, K; and the electrodes are thus retained at a proper distance asunder, so long as a sufficient amount of attraction exists between the magnet and armature to keep the latter down. Should any non-conducting matter obstruct the passage of the electricity through the arc, the induction of the magnet at once ceases, and the spring, H, coming into action, forces up the end, E, of its lever, causing the opposite end to relax its grasp upon the collar, I. The spindle, K, then necessarily slides downwards, and re-establishes contact between the electrodes, the requisite arc being instantly re-formed by the attraction of the armature, as before.

Many electrical lights have been brought before the public; our readers have not forgotten those of "Staite" and of "Paine," which made no small amount of noise, for a time, in both our own and other countries. The electric light is nothing new, and was produced frequently by Sir Humphrey Davy in his lectures. It differs from all other artificial lights, inasmuch as it closely resembles the light of the sun. This is produced simply by the combustion of two pieces of charcoal in contact with the poles of a galvanic battery; these carbon points are named "electrodes." When they are placed in the line of a battery wire, they are first to be brought into actual contact and then gradually separated, when a brilliant stream of light is given out. When the light has been kept up for a few moments, a transfer of particles takes place from one charcoal point to the other, and after a while a cavity is formed in the one corresponding to the convexity of the other. The gradual combustion of the transparent particles increases the distance through which the electric current has to pass, and as the power of the current is limited to the strength of tha battery, the light is extinguished when the hiatus preponderates. If the poles remain at a uniform distance, it is also obvious the steadiness will be vitiated. In none of the electric apparatus for light, heretofore proposed, was this difficulty overcome until this lamp was constructed. By this lamp the electric current is made to regulate itself, namely, by the action of the electro-magnet, and in this respect this invention is a very important improvement over previous electric lamps, which regulated the distance between the points, not by the electric current, the exponent of the light power, but by clock work.

Improved Gate.

W. T. Merritt, of Hart's Village, N. Y., has taken measures to secure a patent for an improved method of operating gates. This is an improvement relating to those gates which are raised up and down by a driver without leaving his seat in a carriage or wagon, and is adapted to make them work better, and also to prevent a casual movement in a gate of this kind. The improvement relates to certain devices for accomplishing the objects mentioned. Why are not such gates placed on all the railroad crossings? They appear to us to be the very kind required for such situations.

Steam Boilers.

W. E. Bird, of Cahawba, Ala., has invented an improved steam boiler, for which he has taken measures to secure a patent. The boiler is composed of cylinders or tubes arranged in layers or tiers having return flues passing through them and connected with a fire chamber. The flues of the lower tubes or cylinders terminate in a trunk or chest with hollow bars, through which the smoke passes to the smoke chamber. The flues of the upper cylinders communicate directly with the smoke chamber.

Improved Cultivator.

An improved Cultivator has been invented by Nathan Razey, of Perry, Ill. A series of knives or cutters are placed vertically in a shaft, the knives being parallel with the shaft and somewhat curved transversely, so that as the earth is plowed and pulverized and all the weeds are completely freed from the soil. Measures have been taken to secure a patent.

Railroad Frogs.

John Cornelius, of Chicago, Ill, has invented an improved method of constructing railroad frogs, for which he has taken measures to secure a patent. The invention consists in forming continuous rails on the parts of the track where frogs or V rails are employed, by means of a spring rail or rails placed on one or both sides of the frog.

Making Palliasses.

A useful machine for making palliasses, has been invented by James Pigot, of Brooklyn, N. Y., who has taken measures to secure a patent. The machine consists of an oblong frame and box, and is made adjustable, so as to make palliasses of different lengths and thicknesses.

Improved Washing Machine.

J. R. Morrison, of Springfield, Ohio, has invented a new and improved washing machine for which he has taken measures to secure a patent. In this machine the wash-board has a reciprocating motion between spring roller frames arranged in a peculiar manner.

The King of Clippers, McKay's mammoth ship, at Boston, of 4,000 tons, will probably be launched about the 1st of October.

Scientific American

NEW-YORK, SEPTEMBER 3, 1853.

Notice-.-To Our Readers.

As the next number of the Scientific American will be the last one of this volume, we hope our readers will renew their subscriptions at as early a date as possible. If they could all do so next week, along with many new subscribers, we would be able to form a very good estimate of the number of papers which we would have to print in opening Volume Nine, in order that we might be able to supply every subscriber with the volume. Our next number will contain a complete index of this volume, and a beautiful title page, engraved expressly for the Scientific American, which cost $250. We are much obliged to a great number of our subscribers, who have already, within the past week, promptly renewed their subscriptions. Our friends will confer a favor upon us if they will show their prospectuses and the chapter of suggestions on other pages, to their friends who are not subscribers. We honestly believe that no mechanic or manufacturer can invest two dollars to better advantage than in subscribing for the Scientific American.

Taste---American Sculpture.

Who can tell us what is the standard of beauty? That "there is beauty all o'er this delectable world" no one can doubt; it is seen in every bounding line of the exquisite statue; in the waving lines of distant dark blue mountains rising up against the red setting sun; in waving fields of golden corn; in the flowing river and the winding rill. But how are we to judge of the beautiful, who is the umpire of true taste; in short, as we have said before, *what is the standard*?

There is a quality of mind which can perceive and appreciate the really beautiful.—This mental quality belongs perhaps to the few; it at least is only fully developed in those who have a fine imagination combined with *common sense*. This is the mental power which gives opinions that never die. It can be cultivated and improved, and we must say that we would like to see it more cultivated among our people than it is. There can be no doubt that at the present moment this quality of mind belongs, pre-eminently, to many Americans. If the Crystal Palace in this city had done no more than it now has in exhibiting the unrivalled works of our countrymen, Hiram Powers, along with those of many foreign sculptors, it has done enough to make us feel grateful and honestly proud. Within the past fortnight, statues of the "Greek Slave," "Eve," the "Fisher Boy," and a bust of "Proserpine," all the works of Powers have been erected in the Palace.—There are no works in sculpture in the exhibition that can approach them; they bear the impress of lofty genius and the finest taste. Yet for all this, we believe that the great majority do not appreciate such works. We noticed that a finely dressed wax boy in "Genin's Clothes Case," met with more admirers than the finest pieces of sculpture. The velvet coat, with spangles, and the satin pantalettes finely embroidered, seemed to attract the attention of more men and women—eliciting from them such remarks as "how pretty," "beautiful," &c.—than the "Greek Slave" the "Fisherman's Boy," and "Mother Eve," looking fondly on the tempting apple—a sample of the finest poetry of art. Our countrymen and women, we feel saddened for you! Lift up your eyes and hearts from the showy and the tawdry, to the sublime and the beautiful; seek to cultivate true taste, and you will the more often drink in, with heaving breasts, emotions of pleasure that will make you happier and better for life. A city cotemporary recently remarked that a beautiful statue of a girl at prayer, was passed by with but a glance, by scores, who at once were delighted with weighing themselves in a pair of large scales. From what we have seen for ourselves, it does not appear that a fine taste—an eye for the beautiful—is a common property, nor does it belong to any class. We noticed, we think, more men and women who were arrayed very extravagantly in costly apparel, display (judging from their remarks) a lower appreciation of the beautiful, than many who were less gaudily mounted. We have made these remarks, because in our opinion they are called for at the present moment; the taste for the sublime and the beautiful can be cultivated, and we have had evidence presented, that such a cultivation of the mind in many of both sexes is demanded, in order that they may be able to form a proper estimate of the genius of some of our countrymen.

Ether Ships and Ether Engines.

One of our city dailies, no later than the 26th inst., directed the attention of its readers to the letter of its Paris correspondent, wherein it is stated that very successful experiments had been made in France, with Mons. Trembley's ether engine, in a ship. It was stated that the engine was 75 horse power, and that its superiority was so great over the steam engine, that it saved 75 per cent. of fuel.

The same paper very innocently remarks, "were the invention in American hands, and applied to American models, there is no doubt that their speed might be made to exceed greatly the maximum speed here indicated, (16 miles per hour.)" Those who are ignorant of the progress of invention—the green ones in engineering—should be very cautious about expressing opinions pro or con about such matters. This Mons. Trembley's ether engine has been in operation in this very city, and could have been seen at the Novelty Works in 1851. If it was a proper substitute for the steam engine, and saved 75 per cent of fuel, does any person suppose that Messrs. Stillman & Allen would not have adopted it? The combined ether engine of Mons. Trembley consists of a common steam engine, with two cylinders and pistons, the one piston acted on by steam, and the other by ether or chloroform, heated by the exhaust steam.—There can be no saving of fuel in this case that we can see; it is a very foolish arrangement, for it would be far better to use the steam to its utmost limit of expansion, or allow it to condense quickly, then to try and get a benefit from its heat by applying it to vaporize chloroform. If there was any benefit to be derived from this ether cylinder, that is in saving fuel, it would surely be more reasonable to apply the heat of the fire at once to the ether or chloroform, and use it as an ether engine entirely. It is well known to chemists that neither ether nor alcohol can be used as economical substitutes for steam; how then can ether save any fuel by being combined with a steam engine? The saving of 75 per cent of fuel is a grand idea, but how this can be done is a most perplexing question to answer; no logician would have made such a statement. It is like making a statement of this kind, "the real effect of the steam engine is only equal to 25 per cent. of the fuel; but the exhaust steam of the same engine applied to heat chloroform produces a mechanical effect equal to 75 per cent of the fuel; in other words, 75 per cent. of the fuel is lost in the exhaust steam of the steam engine." A little learning is not a dangerous thing; it is the *absence* of the *little* which makes pretenders to it dangerous.

Returned Californians Beware.

It is quite common for returned Californians to be met by runners inviting them to come and sell their gold dust and get a high price for it. On Wednesday last week two returned Californians went to a well-known dealer in gold dust in Wall street and asked what price he paid for gold. They were told $17 60 cents per ounce. They asked him to weigh one package of the dust, this was done, and they were told it weighed 11 ozs. 7 dwts. They thought they would try another place, and so they left that office.—They were met by a runner from another establishment, who told them he would give them $18 25 for each ounce. This to them appeared to be quite a difference in their favor, so off they went with this liberal fellow to sell their gold and get 85 cents more per ounce for it. The same package of dust was pulled out and asked to be weighed, when lo, it had lost 3 ounces 4 dwts.—it was declared to weigh 8 ozs. 3 dwts. exactly.—"Give us our gold!" was the response of the miners; the scoundrel buyer and runner looked blank, and the returned Californians departed with their dust for another gold brokers office. Here the same package of gold weighed 11 ozs. 7 dwts., and corresponded with the weight of the first broker. In this place they sold their gold—they were sure they had met an honest man. This story we had from the lips of the returned miners themselves. We have no doubt that many poor fellows just returned from California are cheated and deceived by such scamps as those we have described. The difference in the weight of the gold made between the honest and the dishonest brokers on 11 ozs. would have amounted in cash to $52,80. Let returning California emigrants beware of these land sharks—the gold dust runners and dishonest brokers. Let them at once go to a respectable broker, one whose name and character is established.

Improvements and New York Railroads.

On the 12th of August, 1830, the first railroad in this State was commenced for the purpose of connecting the Hudson with the Mohawk waters, between Albany and Schenectady. The distance was 15 miles, and it took twelve months to finish the job—not bad work, however, considering the inexperience of our people in such matters then. It was an expensive and unscientifically constructed road, for it cost about $1,000,000, and had two inclined planes on it, one at Schenectady and the other at Albany, by which the cars were drawn up partly with horses and partly with stationary steam engines. The object of this road was to cut off the long canal passage by the "Cohoes Falls," which took the packet-boats so long to accomplish. The Engineer who surveyed and planned it was Peter Fleming, a good mathematician and well-known in this city, of which he surveyed and laid out much of the upper portion. He was sent over to England by the projectors of the road prior to the time it was commenced, to obtain all the information possible on the subject; but railroads were but in their infancy there as well as here. The route selected, and the manner decided upon for operating it, were very rude but not bad for that period, especially as it was the pioneer railroad of this State. An English locomotive, named the "John Bull," was purchased abroad, and was the first one used. With some alterations (although it was very clumsy) it did good service, at the cautious rate of drawing trains from Albany to Schenectady, in about two hours. Over that short road we have travelled before a single rail was laid down in any other part of this State, and have been detained as long upon it, in 1836, as in going from Albany to Utica in 1846.

This pioneer railroad has undergone many changes in construction and locality. The inclines have been abandoned, and with them the horses and stationary engines. Before this change it never paid expenses, but shortly afterwards it commenced to pay good dividends, and is now valuable stock.

What a change has taken place in New York Railroads since 1830: instead of a poorly constructed railroad, only 15 miles long, there are now 2,013 miles of good railroads in successful operation, being at the rate of nearly 88 miles, which have been constructed during every year since 1830, or nearly six times more, every twelve months, than was constructed during the first twelve months of our railroad history. When we take a view of the improvements which have been made in the construction of our railroads, engines, and cars since 1830, we feel grateful and proud of the progress which has been made in railroad invention and improvement in twenty-three years. Then the rails were all the miserable flat kind, laid down upon very inefficient ways. Now all the rails are of the heavy T or the compound kind. Then the locomotives, in comparison with those which we now have, were like donkeys to blood-racers. Then the cars were like pigeon coups—short, dumpy, and dingy; now they are long saloons, beautiful in design, and comfortable in all their arrangements; in short, the railroads of 1833 (twenty years ago), in comparison with the railroads of 1853, appear to us more like relics of a barbaric age than works of modern times. It is not by taking the improvements of a day, week, month, or year, that we are able to see what progress we have made, but by looking down the long avenue to the end of the journey. In taking such a look down the avenue of railroad improvement, we feel as if we could give three hearty cheers for the progress which has been made in *useful improvements*. Will the next twenty years witness as many improvements in railroads as have been made during the past? We have no doubt of it,—we are not at the end of improvements yet. Engineers and mechanics! look to the past, and let it stimulate you to renewed effort: there are many prizes yet to win.

Prizes at Fairs.

The State of Ohio is eminently distinguished for agricultural enterprize and thrift.—This is owing to the good sense of her people, as manifested in her excellent "County Agricultural Societies," which are the best evidences of the good qualities of the "State Society."

The next Annual Fair of the Green County Agricultural Society, will be held at Xenia Ohio, on the 14th and 15th of this month (Sept.) and many prizes will be awarded by the intelligent committees appointed. Among the premiums to be awarded, we notice, with no small degree of pleasure, sixty volumes of the Scientific American, to be given in sixty different prizes. This Agricultural Society awarded a number of prizes of our last volume, at its last annual Fair, and they have no doubt given great satisfaction, as the number of prizes are nearly double this year.—Agricultural and Mechanics' Associations cannot, we are sure, offer more suitable prizes, for many things, than a work like the Scientific American. Many of such associations now understand the true value of such prizes.—What is a diploma to any man in comparison with a scientific work! Nothing but a toy. Those men who have offered such prizes as the Scientific American, evince a strong desire to spread abroad useful information, and have the real good sense to adopt one of the best possible modes of disseminating it. We are positive that every one who is awarded a volume of the Scientific American, will be both pleased and profited.

Patents in Canada.

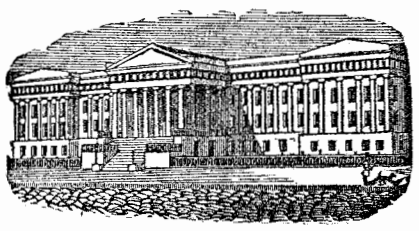
We have received a communication from J. B. Futvoye, Esq., of Quebec, giving us proper information respecting the securing of patents in the British Colonies of North America. The present Patent Laws (the new law recently enacted in England) for the Colonies has provided no means for American citizens securing patents in them; British subjects, however, who may be in the United States, can secure patents in Canada, by going to Quebec and remaining there only one day, and through his instrumentality a patent may be obtained.

Our Canadian, Nova Scotia, and New Brunswick friends, we hope, will exert themselves and get their patent laws amended so that our citizens may be able to obtain patents in the Provinces at a small expense. It would be well if the fees for American patents were reduced to $30 to stated residents in the Colonies, and we hope the fees for American citizens will be reduced in the colonies to the same standard. An American patent, we know is of far more valuable than a Colonial one, but after all, in a question of an improvement in the arts, there is but little use of a dividing line on our Continent.

Cast-Iron Partition Walls---Erratum.

We noticed last week that L. A. Gouch, architect, Harlem, now of Yonkers, New York, had designed to construct double cast-iron partition walls for dwellings, the advantages of which we distinctly pointed out. In the notice of the same, however, there is one error, which demands correction. The thickness of the plates was stated to be *one sixteenth* of an inch in thickness, it should have read *one-sixth* of an inch. Mr. Gouch has taken measures to secure a patent, and will make his plates one-fourth of an inch thick, thereby rendering them, when double very strong for partition walls.

The members of the Montreal Mechanics' Institute, with their wives and children, are going to visit Portland, Me.



Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING AUG. 23, 1853.

PROCESSES FOR PURIFYING ALCOHOL—By Luther Atwood, of Boston, Mass.: I claim the use of the manganates and permanganates existing as soluble compounds, however obtained, for purifying alcohol so as to adapt it to nice purposes.

GENERATING STEAM—By J. P. Moinier & P. H. Boutigny, of Paris, France. Patented in France, Jan. 18, 1853: We claim, in generators for generating steam at high temperatures from water introduced into the generator when in a highly heated state, injecting or introducing water from the top or near the top of the generator, when this mode of feeding or introducing the water is combined with the series of perforated metallic diaphragms described, arranged one above another in the generator, so as to subdivide the water, and at the same time increase the evaporatidg surface of the generator, as described, the water being gradually heated, and subdivided in its passage through the apertures or meshes of the diaphragms before it comes in contact with the more highly heated surface of the generator, as described.

SOAP CUTTING MACHINES—By J. B. Duff, of New York City: I claim making the wire knives, arranged and set with weights capable of yielding, so that they will form a loop in passing through the soap, and consequehtly cut it smooth and straight in combination with the feeding slatted bed, or any other equivalent device for feeding and forcing the soap up to the said yielding wire knives, the whole being as described.

[See notice of this invention on page 204, this volume Sci. Am.]

OSCILLATING STEAM ENGINES—By M. J. Gardner, of York, Pa.: I claim the mode of introducing the steam, the circular steam tubes, the circular steam chest, and packing boxes, as described.

I do not, however, confine myself to the precise position or dimensions of the various parts described, but to use such positions and dimensions substantially the same, as may be best adapted to produce the desired effect.

SEED PLANTERS—By Peter Horn, of Hagerstown, Md.: I claim the spring, in combination with the projection and arm or lever, for the purpose of opening and closing the recess through which the seed passes, as set forth.

Second, I claim the arm or lever, in combination with the lever and fulcrum, for the purpose of raising or lowering the drill tubes and operating the springs, as described.

HAY RAKES—By F. B. Parker, of Queensville, Ind.: I claim the spring catches projecting downward from the front ends of the hand bars, and provided with sloping lips, which, bearing upon the front tines, assist in holding the rake to its place until relieved by the withdrawal of the main stop, as described.

ARRANGEMENT OF CUTTERS FOR TURNING—By Milton Roberts, of South Levant, Me.: I claim arranging straight edged and grooved cutters on a frame moving parallel to the axis of the lathe, when said cutters are placed in pairs obliquely to the piece to be turned, each set forming salient angles with each other in the frame, by which arrangement each set acts by a gradual drawing cut upon the piece, the grooved tools following to finish the work.

[An engraving of this machine may be found on page 108, this volume Sci. Am.]

GRATE BARS—By Samuel Vansyckel, of Little York, N. J.: I claim forming a hook or catch upon the under side of the grate bars, and passing through or over said hooks, or catches a holding bar to prevent twisting or warping, as described.

BUTTER WORKERS—By Lettie A. Smith, of Pineville, Pa: I claim, first, the combination of the cooling drawer or ice box, with a butter tray, as described.

Second, I do not claim, in general, the device of the working lever in combination with a butter tray or table, but I claim forming such working lever with acute angles at the sides of its working face so that it may serve the double purpose of breaking or pressing the butter and turning it over.

[See notice of this invention on page 284, Vol. 7.]

RAILROAD CAR SEATS—By Wm. M. Warren, of Watertown, Ct: I claim the manner in which the foot boards are constructed and arranged, viz, the foot-boards being attached by joints to slides, said slides having racks on their upper surfaces, and working on beds connected by hinges, the under sides of the slides being provided with spurs or clicks, which catch into the racks, and retain the foot-board, when pressed upon by the feet; the beds being retained underneath the seat, when the foot-boards are not in use by means of the catches, or by any other convenient mode.

[See notice of this invention on page 108, this volume Sci. Am. Mr. Warren has two patents on car seats]

BORING CANNON—By L. A. B. Walbach, deceased, late of the U. S. A.: I claim the method described of boring cannon or the barrels of other ordnance or fire-arms, by perforating the same with an annular hole, which leaves a central core, in combination with a second operation for detaching and removing the core, as specified, whereby the amount of material to be reduced to chips, the time and labor of boring, and the wear of tools, are greatly diminished, and the accuracy of the work increased.

I also claim the transverse cutter or the equivalent thereof, for grooving or cutting off the base of the core, as specified.

I also claim the method described of ascertaining the quality of the gun, by taking out a core of sufficient diameter and length, from the axis or center of the bore to be tested mechanically or otherwise.

COUNTERPANES—By Zachariah Allen, of Providence, R. I.: I claim the ribbed counterpane described, as a new manufacture, it being so made that the thickness and twist of the cords forming the ribs on the same, by their tendency to untwist, will give to the said ribs a wavy or undulating surface, as set forth.

PADLOCK—By Henry Ritchie (assignor to S. C. Thompson, G. W. Westerfield & Henry Ritchie), of Newark, N. J.: I claim the combination of the bolt, guard, and the double toothed tumbler, one tooth of said tumbler fitting in the shackle, and the other tooth fitting in the notch at the back of the bolt, the bolt, guard, and tumbler, operating as set forth.

[This is a very simple and good improvement.]

CUTTING AND BEVELLING PRINTERS RULES—By Snow Magoun, of Newton, Mass. (assignor to E. N. Moore & C. H. Crosby, of Boston, Mass.): I claim the machine described, for cutting and bevelling printers' rules, constructed with a sliding tool carriage, which carries the cutting tool forward and back across the rules, as set forth.

DIVING BELLS—By Jonathan Foreman, of Boston, Mass, (administrator of E. W. Foreman, deceased, late of New Rochelle, N. Y., and assignor to Henry W. Sears, of New York City: What I claim as the invention of the said Foreman is the combination of the reservoir of compressed air at the surface, in connection with the diving chamber or bell, and the arrangement of the movable block or pulley, as described, whereby the chamber or bell may be moved and directed at the will of the operator within, as set forth.

MACHINES FOR SEPARATING STRAW FROM GRAIN—By E. S. Snyder, of Charlestown, Va. Additional Improvement; original patent dated June 13 1848: Having set forth, in addition to the original specification, the utility of my additional improvements, I claim the peculiar construction of the rotary apparatus, formed of concavo, convex aprons or shields combined with the curved prongs, the said rotary apparatus used in combination with the threshing cylinder, as zet forth.

I also claim setting the spout at about an angle of 45 degrees with the horizon, and adding the escape piece, to prevent the grain from flying about.

DESIGNS.

STOVE—By S. H. Sailor, (assignor to J. G. Abbott & Archilus Lawrence), of Philadelphia, Pa.

NOTE—Five of the patents in the above list were secured through the Scientific American Patent Agency.

[For the Scientific American.]

To Prevent Dampness in Brick Walls.

Dampness in walls may be prevented, and a more uniform temperature secured in the rooms, by enclosing a stratum of air in the wall. A space of about three inches, should be left between the outside half brick, or stretcher, and the inner wall: this space may be commenced on the foundation course; where it is desirable to have the basement story dry; where it is not, it should be commenced at the first floor, and extend around the building.

Then cut wire about three-sixteenths of an inch in diameter (or not thicker than the joints in the wall are intended to be) into pieces, nine inches long, bend one inch of each end of these pieces to a right angle, and both ones in the same plane, for ties to connect the wall across this space. Every three courses lay them over it, about two feet apart, with their ends half away across the bricks upon which they lay, so as to have them not over each other, but equally distributed along the space. If the space is not over three inches wide, it may be closed at the top by a heading course, which, being sheltered from driving rains, by the cornice, and eaves, will not conduct any water to the inner wall. At the ends of the building it may extend to the top of the joists, and the wall be dropped off the thickness of the space, and then built solid, or it may be continued to the rafters. At the door and window jambs the band may be kept as usual, by clipping the headers; and at the chimney, the space may be stopped at the flues, and greater thickness of the chimneys will insulate them.

As atmospheric air is one of the very worst conductors of heat, it will prevent the wall from being suddenly heated or chilled through by changes in the weather. In very cold climates it would be better to have strips of sheet iron, three and a half inches wide, laid along over the space at the top of each story, with one edge resting in the joint of the outer wall, or upon the wires, and the other leaning back against the inner wall, so as to be highest on the inside, and the partition walls to extend across the space and connect with the outer wall. This, by cutting off the communication, would prevent the air, as it acquired a more elevated temperature by the heat of the room in which the fire is kept, from rising, and its place being supplied by the colder air from other parts of the building; and then, by having duplicate sash in the windows, with a stratum of air between them, the insulation would be complete. To prevent injury to the wall, from the expansion of the enclosed air, small openings should be left between the ends of the bricks, near the bottom of the space, about half an inch wide, or not large enough to admit rats. The pieces of wire may be dipped in pitch or oil paint to keep them from rusting.

These pieces of wire may appear to be a slender tie to many, but it should be remembered, that though a single hair is quite slender, a horse may be pulled out of the mire by his mane, and any required strength may be attained by increasing the number of wires. But placed as above recommended, the wires would bind the wall better than it is often done by the present mode of binding it without heading bricks, for as the tie is hidden by the first course that is laid over it, it is liable to be forgotten and neglected; and this may be one cause of the frequent falling of walls in your great city; the wires across the space will, at any time, be visible, until the space is closed. For this imperfect mode of binding the outside wall, it would be better to leave the space nearest to the inside wall, as the thin part would then be less exposed. By superseding the old Flemish or English bond, with the present modes in common use, the gain in beauty is not commensurate with the loss in strength, and mechanics generally are too much inclined to sacrifice the latter to the former. Those, however, who acquire a character for doing the most substantial durable work, should have the preference; they at least have the pleasure which arises from the consciousness of having done their duty.

By having bricks of double width moulded, and every fifth or sixth course laid with them, the bond of all stretchers might be preserved, without at all diminishing the strength of the wall; but so far as my observation has extended this has not been done.

HEZH. POLLARD.

Lafayette, Mo. Aug. 8, 1853.

Scientific Memoranda.

THE MOON'S MOVEMENTS WRONG.—The "London Court Journal" says, Mr. Adams communicated to the Royal Society, at the closing meeting of their session in London, that he had discovered that the principle of Laplace's calculation of the secular motion of the moon is positively erroneous. This is a discovery which affects the whole range of lunar astronomy, seeing that all the caculations made on the assumption that the moon really was in the place assigned to her, are wrong. A staff of computers will therefore have to be set at work at the Observatory, to recompute the lunar observations, avoiding the error, which amounts to about seven seconds. We shall then have the means of rectifying our Nautical Almanac, and of making it more accurate than ever; while those astronomers, and they are not a few, who have written about ancient eclipses, will have to go over their task again, and see what they make of it with the new principle. It was said, shortly after Mr. Adams' discovery of Neptune, that such a man would find other great works to do in astronomical science, and here we have an invaluable confirmation.

SCIENTIFIC ENTHUSIASM.—Professor Agassiz could not attend the Convention lately held at Cleveland, on account of sickness caused by his researches in the rice swamps of the South. The Cleveland Herald says:—His search for things new and strange at the South was crowned with complete success; but he contracted the malignant fever of the country, from which he barely escaped with life. Among other novelties which he found there, was a fish without ventral fins, and it is related as expressive of his unextinguishable enthusiasm in matters of science, that when slowly recovering, a friend called to see him and said to him, "I am sorry to hear, Professor, that you have been dangerously ill." "Ah, yes," said Professor A., "I have been very sick but no matter, I have found a fish without ventrals."

PHOTOGRAPHS ON WOOD.—Drawings of this art on wood have lately been successfully produced in Manchester, England. Beautiful pictures of buildings, and perfect portraits of individuals have been drawn by sunlight upon smooth blocks of boxwood, such as are ordinarily used by wood engravers. This discovery will be of invaluable service to the latter art, as it will save the expense of employing draughtsmen to mark the blocks previous to engraving. Drafts of complicated machinery in perspective, and other complicated sketches, which require much time, expense, and skill in the preparation of blocks for engraving, can now be produced in a moment with the light of the sun.

Always Begin Right.

The following extract is from the Philadelphia Ledger. We sincerely commend it to our young readers; it contains "the words of truth and soberness:—

"Above all things, life should be begun right. Young men rarely know how much their conduct, during their first few years, affects their subsequent success. It is not only that older persons at the same business form their opinions of them at this time, but that every beginner acquires, during these years, habits for good or ill which color his whole future career. We have seen some of the ablest young men, with every advantage of fortune and friends, sow the seeds of ruin and early death by indulging too freely in the first years of manhood. We have seen others, with far less capacity, and without any backing but industry and energy, rise gradually to fortune and influence. Franklin is a familiar illustration of what a man can do who begins right. If he had been too proud to eat rolls in the street when he was a poor boy, he would never have been minister plenipotentiary to the court of France.

Always begin right! Survey the whole ground before you commence any undertaking and you will then be prepared to go forward successfully. Neglect this, however, and you are almost sure to fail. In other words, begin right. A good commencement is half the battle. A false first step is almost certain defeat. BEGIN RIGHT."

Change in the Patent Office.

E. Foreland, of Maryland, has been promoted to Assistant Examiner in the Patent Office, in place of Dr, Everett, promoted to Examiner, vice F. C. Smith, resigned.

Mr. Smith was an able Examiner, and we are glad to learn that the vacancy occasioned by his resignation has been filled by Dr Everett's promotion. Dr. E. has been some years in the office, and deserves the position he now occupies. Judge Mason is conducting the affairs of his office with creditable zeal and energy, and we hope he will reform past and present abuses with prudence and discretion. Hasty conclusions are injurious and not easily mended, especially where important interests are at issue. The complicated and illiberal management of this department during past years, has been the just cause of ceaseless complaint.

Foreign Subscriptions.

Foreign subscriptions to the Scientific American can be paid in London, to Messrs. Avery, Bellford & Co., No., 16 Castle street, Holborn, and to M. M. Gardissal & Co., No. 29 Boulevard St. Martin, Paris, or to their agents located in the chief cities throughout the continent of Europe. The above firms are our sole and exclusive agents and correspondents in Europe, and all subscriptions and remittances can be made through them. It is also desirable for parties abroad intending to employ us as agents, that they should in future consult our foreign agents and correspond through them. This is the most satisfactory course to pursue.

Crossing the Ocean in Six Days.

Major Norris, of Philadelphia, at the dinner given to Mr. Saunders, in this city, last week, stated that a vessel was now building in this city, which would make the voyage to an English port in six days, before the first of February. J. W. Griffiths is the architect, and Mr. Norris, the engineer; he said it was no experiment, but a fixed fact. Well, we hope so, but we will allow the said vessel 8½ days at least.

Steamship Burned.

The U. S. Mail steamship Cherokee, was destroyed by fire while lying at her wharf in this city on the evening of the 26th ult. The value of the vessel was $200,000, and she had a cargo in, all ready for sea, worth about $300,000. The spectacle of this burning vessel was grand and terrific. Some suppose that it took fire by the spontaneous combustion of some articles on board.

The Dublin Exhibition.

The Dublin Exhibition is now attended by nearly 10,000 visitors daily, including a shar of the Irish aristocracy. Its soccess is therefore no longer doubtful.

TO CORRESPONDENTS.

T. W., of Ky —Several attempts have been made to use steam carriages on common roads; in point of economy they will not answer.

S. W., of Pa.—The method of treating journals is very good, it is similar to Babbitt's. The difference between the liquid and the gas of carbonic acid is 2000, that is, 1 cubic inch of the liquid will expand to 2000 cubic inches; it is however, very difficult to tell the exact expansion of this acid, for it is exceedingly sensitive to heat and cold.

H. W. H., of Va.—We will wait until you arrive with your model, so as to obtain more pointed information respecting its merits.

W. F, of Mass.—We understand you now; you may rest assured that you could obtain no "power" equal to that expended in revolving or vibrating your machine.

C. S., of Mass.—We believe that the faculty of judging of colors is as strong and universal in men as women. We do not see a reason for placing the evidence of this faculty in the eye-brow; we do not know a single person afflicted with this disease.

S., of E.—We cannot see how your funnel boiler feeder can operate at all.

Z. E. C., of Ct.—There is a mode of reducing hard steel so as to make it forgible; the mode you can find in any good work on metallurgy; it would occupy too much room to give you the information through our columns.

B., of Mo.—We are not aware of an apparatus in existence for making ice, without an air-pump and freezing mixtures, that is, in warm and in temperate weather.

J. K. F., of Ohio—The "relay magnet" is for the purpose of closing the circuit to make the local battery operate the receiving magnet; this was a great improvement when invented. Your plan cannot meet the case, as the size and multiplicity of magnets are not the things required.

W. T. C, of Ohio—There is no patent on the chain pump; we do not know the price of the article in this market; your subscription expires with No. 26, Vol. 9.

A. H. & Co., of Mass.—We will endeavor to procure and publish the specification of Mr. E.'s patent.

J. S., of N. Y.—The extra weight will be an objection to the car; so much so as to preclude the possibility of its introduction; one ton and a half is too much of an increase in the weight of a single passenger car.

E. D., of Pa.—As we understand your letter (your pencil sketch is too obscure), your steam pump is operated upon the same plan as that of Worthington & Baker's; as described by you, it appears to be the same, only you take your steam at the middle of the slide, which is not new.

J. P., of N. C.—There are no infallible rules for detecting counterfeit money; it requires practice and constant knowledge of money to do it.

J. K., of Pa.—We have never seen the same plan of banding and pulleys in use as that which you propose, and consider it patentable if useful; but we cannot see any advantage to be derived from it; experience, however, and fair trials have perhaps proved its advantages to you, and you can therefore prove its utility.

C. L. R., Jr, of Ct.—Get Gwynne's pump; for more information see the advertisement in some of your recent back numbers of the Sci. Am.

Money received on account of Patent Office business for the week ending Saturday, Aug. 27:—

G. W. B., of N. Y., $372,50; W. & C., of Ill., $30; G. J. P., of Mass., $30; L. P., of Vt., $50; F. & R., of Vt., $25; H. L., of Mass., $25; R. K., of Mass, $40; W. C., of Va., $30; B. D. S., of Va., $105; T. & Sons, of N. Y., $200; J. J., of N. Y., $55; E. J. M., of Conn., $30; G. C., of Me., $35.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday Aug. 27:—

L. P., of Vt, (2 cases); D. E. McD., of Mass.; G. H., of N. Y.; J. W. M., of Ala.; J. R. M., of Ohio; H. F. B., of Mich.; J. C, of N. Y.

A Chapter of Suggestions, &c.

TO CORRESPONDENTS.—Condense your ideas into as brief space as possible, and write them out legibly, always remembering to add your name to the communication. Annonymous letters receive no attention at this office. If you have questions to ask, do it in as few words as possible, and if you have some invention to describe, come right to the business at the commencement of your letter, and not fill up the best part of your sheet in making apologies for having the presumption to address us. We are always willing to impart information if we have the kind solicited.

FOREIGN SUBSCRIBERS.—Our Canada and Nova Scotia patrons are solicited to compete with our citizens for the valuable prizes offered on the next volume. [It is important that all who reside out of the States should remember to send 25 cents additional to the published rates for each yearly subscriber—that amount we are obliged to pre-pay on postage.]

RECEIPTS.—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

PATENT LAWS, AND GUIDE TO INVENTORS.—We publish, and have for sale, the Patent Laws of the United States. The pamphlet contains not only the laws but all information touching the rules and regulation of the Patent Office. Price 12 1-2 cts. per copy.

BINDING.—We would suggest to those who desire to have their volumes bound, that they had better send their numbers to this office and have them executed in a uniform style with their previous volumes. Price of binding 75 cents.

MISSING NUMBERS.—Subscribers who have failed to receive some of the numbers during the year, can have them supplied by stating what numbers are missing at the time of remitting for the new volume.

INFALLIBLE RULE.—It is an established rule of this office to stop sending the paper when the time for which it was pre-paid has expired, and the publishers will not deviate from that standing rule in any instance.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement:—Of Volumes 1, 2 3 and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1?5. Of Volume 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7 all; price in sheets, $2; bound, $2,75. Of Vol. 8, all the back numbers subsequent to No. 27, but none previous.

PATENT CLAIMS—Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office—stating the name of the patentee, and enclosing one dollar as fee for copying.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, provided they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engraving executed to suit our own columns in size and style Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent or the amount of the enclosure but no name of State given, and often with the name of the post office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post office at which they wish to receive their paper, and the State in which the post office is located.

☞The above chapter of variety we have inserted for the mutual benefit of our patrons and ourselves. If our subscribers will retain in mind the suggestions contained in the above paragraphs, they will be likely to be benefitted thereby; besides they will save us much valuable time and a good deal of perplexity.

ADVERTISEMENTS.

SCIENTIFIC MUSEUM.

Preservation of the Eyes.

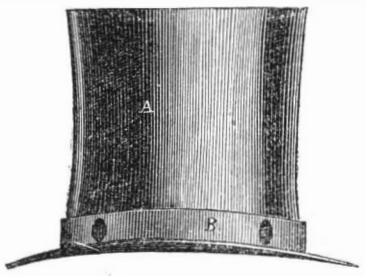
There is an old tradition that the eyes are strengthened, and the vision preserved in old age, by rubbing the closed eye-lids frequently with the finger in a horizontal direction. About three years ago there was considerable excitement in this city, by persons professing to cure weakness of vision, yea, even restoring faded sight, by manipulating the eye-balls. The New York "Scalpel" treats such pretensions as delusive, and asserts that such treatment as mechanical manipulation, for the eyes, is positively injurious. It cites some cases where great injury resulted to those who submitted to rubbing of the eyes for the cure of faded sight, and instances a case of a man who lost his sight forever by some one—a friend—who thoughtlessly came behind him and closed his eyes firmly with his hands, calling upon him to guess who it was—a not uncommon custom among thoughtless young people. The eye is so very tender—is such a fine piece of mechanism, that it must be handled and treated with great care and gentleness. Many become short sighted at an early age, constitutionally or by sickness, or by imposing too much labor upon those wonderful organs. In health the eyes will undergo much fatigue, but they are as capable of being over-taxed as the arms, or the limbs. Much reading or writing, by artificial light, is very trying to the eyes, especially if the light is unsteady, too brilliant, or too weak. A good full light, shaded with a light blue globe, is the best to read or write with during evening hours. Upon no consideration should a man read more than four hours at once, by artificial light, and he should give his eyes ten minutes' rest after he has read two hours; this is the experience we have gathered from not a few persons. Those who are blessed with strong eyes should not over-tax them, as many zealous students do, by too much night study, or as some merchants do, by too much night writing. There are instances on record of a sudden loss of sight by strong men, who had read and written by lamp-light, as if their eyes never would fail, and their vision never lose its power. The celebrated Euler lost his eye-sight by an imprudent night's study, in some of his mathematical calculations. The smoke of lamps is very hurtful to the eyes, hence a good circulation of air is as necessary for the eyes as for the lungs. The "Scalpel" asserts that it is injurious to wash the eyes by dipping the face in a basin and opening the eyes in the water, and recommends cold tea or milk and water, for bathing the eyes in preference to water itself. A very weak solution of the sulphate of zinc is excellent for blood-shot or surface-inflamed eyes; we have never known it to fail in effecting a cure in a few days.

Lightning from the Earth---Houses Struck.

On the 19th ult., during a severe thunder storm, the house of Sterling Armstrong, in Newark, N. J., was struck with lightning, although it had a lightning rod. Some person went and examined the house afterwards, and published a letter in the "Newark Advertiser," asserting that the lightning which struck the house *came* out *of* the ground. This he judged from the course of the lightning and its effects. From the description which he gave of the effects of this flash of lightning, no evidence was presented that would have led us to conclude that it came out of the ground; we do not believe that a single house ever was struck with lightning from the ground. Since the time the account was first published of this house being struck, E. Merriam, of Brooklyn, who has given great attention to such subjects, has visited it and made a careful examination of the course of the lightning and its effects. He has formed a very different opinion from that of the other person who believed that the house was struck with lightning from the ground. He describes how the lightning came from the clouds, and minutely points out its course, and the reason why it was so struck while it had a lightning rod. This rod was made of good iron, and was of a proper thickness, but its points were painted with white paint, and so was the whole rod excepting that part on the roof of the house. This was bare; the lightning passed from the upper line of the unpainted part until it came to the paint, then passed off to nails in the shingles, and from them descended through the house. He asserts that he never saw a painted rod perform the duties of a conductor. Here then we have evidence and an opinion that Faraday is wrong in respect to the *solid section* of the rod; the surface and not the solid section, according to Mr. Merriam, is the grand desideratum. Nay, this goes to prove that lightning is conducted on the surface only; for if this were not so, the current spoken of would not have left this rod when it came to the paint, but have passed down through it, as through the covered wires of the telegraph.—There appears to be a discrepancy here, upon which light is required to be shed.

New Ventilating Hat.

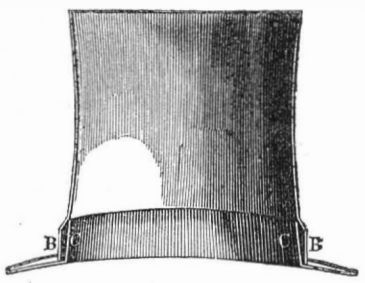
FIG. 1



The annexed engravings are views of a new hat recently registered in the London Patent Office, by a Liverpool hat company named Flanagan. Figure 1 is a vertical elevation, and figure 2 is a vertical section.

The object of this hat is to fit it more comfortably to the head by forming a soft rim in it where the head enters. The body, A, of the hat, is the same as it has been, except that it is made with an external air channel, B, standing up a short distance above the rim.—The mouth of the hat is therefore made a little wider than those in common use, and the channel, B, answers as a receptacle for air to act as an elastic cushion. This recess may contain granulated cork or air alone. It is covered tight on the inner side by a flexible band, C, which is glued to the body of the hat with an opening left for the external air. An encircling air chamber is thus formed to embrace the head, and make an easy, pleasant fit. All that appears externally, is the band-like projection which contains the elastic fitting piece.

FIG. 2.



Two years ago, when Kossuth came here with a felt beaver, the rage for such head pieces, with little feathers in them, was notorious; we welcomed the felt hat, but not the feather. Since then the old hard shell has come into vogue again, and we all wear our little pots on the top of our heads once more. With few exceptions, the black silk hat is the only one in general use. It is not a good hat, but a positively bad one. It is hard and uncomfortable, and is perfectly air tight; it therefore does not allow the vapors of the head to pass off; it is the cause of headaches and baldness on this very account. The silk hat has a felt body; this is saturated with lac varnish, and a black silk plush cover (by steaming and ironing) is cemented on it.—How can it then be comfortable, and how can it be anything but injurious to the health of the head by long use? This illustrated hat provides for the comfort of the person who wears it, and we hope that our hatters will either adopt this or some other mode of improving their silk hats for the comfort and benefit of their customers. We are well aware that people—men and women—will, if they can, live up to the fashion, whatever that be, either high heeled, uncomfortable boots, tight laced corsets, or *hard shell* hats.—We do not care what the fashion may be, if it does not sacrifice comfort, good taste, and common sense. For these reasons we want all the fashionable hats hereafter to be made with comfortable mouth pieces and some ventilating arrangement all for the benefit of poor humanity.

Events of the Week.

AMERICAN INGENUITY REWARDED.—The Calcutta "Englishman," of June 16, contains the award of the committee, who have been there three years at work testing different varieties of cotton gins, dividing the prize of 5,000 rupees between two Massachusetts Yankees, Messrs. Bates, Hyde & Co., and Messrs. Carver & Co. That sum is to be sent to Washington for the parties entitled to it, with gold medals of the Agricultural Society of India for each of them. The society further voted to purchase the two machines at the cost price of construction.

NEW SCIENTIFIC INSTITUTION.—On the second Monday of next month (September) a new collegiate institution will be opened near Port Gibson, Mississippi, E. N. Elliott, L. L. D. being President and Professor of Natural Science. The course of study will embrace the whole range of the sciences, such as practical mathematics, mechanical philosophy, surveying, engineering, chemistry, &c. Students will be received at any grade of proficiency, and the charges for tuition, room rent, board and washing, will be only $200 per annum. Here is a fine opportunity presented to many of the sons of our southern readers. They will be under the charge of competent, moral teachers and guardians.—The name of the college is the "Southern Scientific Institution."

Feeding Horses.

Having two horses to feed I tried the two following methods:—First, I took a grist to the mill, consisting of half corn and half oats for feed. Counting the toll at the mill, waste, and loss of time, it cost one-seventh of the grist. I save all this now by soaking the feed in water for about two hours, with just about as much as will cover it, which makes it greatly increase in bulk, and the horses thrive just as well on it as on ground feed.

C. J. D.

New Guano Island.

A statement has been published to the effect that a large supply of guano has been found on an island in the Indian Ocean, between Mauritius and Calcutta, and that some of the samples sent to England are of a superior quality. The island is stated to be twenty miles long and seven broad, and covered in every part. Should the expectations thus raised be fulfilled, it will be a serious matter for Peru, and a happy thing for our farmers, as the price of guano will no doubt be reduced thereby.

Precious Stones.

The "Alta California" states that specimens of beryl, and topaz of remarkable value and beauty, consisting of emerald, both stones of the first water, have been found on Tuolumne river, and the present high price of this gem, being next in value to the diamond, will warrant extensive exploration in search of them.

The contents of the Egyptian galleries of the Louvre, at Paris, have just been re-arranged, and a portion of the interesting discoveries made by M. Mariette, some time ago, in the Temple at Memphis (found under ground), has been added to them.

An unknown comet has just paid us a visit. It is a small one, and makes another of those mysterious heavanly wonders which puzzle and confound the reasoning of astronomers.

Lieut. Maury recently lectured in Liverpool and explained his Wind and Current charts. He was highly complimented for his discoveries, scientific information, and modesty.

LITERARY NOTICES.

THE SCALPEL—We have received the August number of this able monthly journal of health, edited by Dr. E. H. Dixon, New York: it contains several very valuable papers on the structure and functions of the nerves, is an elaborate and ably written article worthy of careful perusal.

Parts 9 and 10 of J. Payne Collier's edition of Shakspeare's Works, embracing several very important emendations, are received. This valuable and only true version of Shakspeare, is issued by J. S. Redfield, at 25 cts. per number: 16 parts complete the work.

MEYER'S UNIVERSUM—Vol. X, Parts 1 and 2.

UNITED STATES ILLUSTRATED—Vol. 1, Parts 1 and 2. These popular illustrated serials are published by Herman J. Meyer, 164 William st, New York.