Scientific American.

NEW-YORK, AUGUST 2, 1856.

Improvements.—No Standing Still.

Some persons have expressed the opinion that we must soon reach the climax of invention and mechanical improvement. The reasons which they give for this opinion are in substance as follows:—"So many wants have already been supplied by inventions, that the objects on which to exercise the faculties of inventors are becoming less daily, and must soon become very limited in number."

Such reasons are not founded on correct data, observation, or reflection. It is true that the minds of inventors have been very active during the present century, and they have happily supplied a multitude of wants for the benefit of mankind, but instead of these inventions circumscribing the number of objects for exercising the inventive faculties, new objects seem to multiply, and the field for improvement has expanded with the advance of invention. No better evidence can be adduced in support of these assertions than the number of patents which continue to issue from the Patent Office—instead of decreasing in number they have rapidly augmented. And it never can be otherwise in any country where proper inducements are presented for making improvements. The mind of man is so constituted that when it is directed aright, it strives after that perfection which is the attribute of the Deity. And as the object to be attained is infinite excellence, there is room for man to advance and improve forever. Every new step which he makes in his onward progress, shows him more of his defects and incites him to do something better still. Every new object also, to which he devotes his attention, in order to make improvements, is like a new torch lighted up before him; it throws its beams over a greater area, and reveals new objects, unseen, or overlooked by him before. As the road to perfection has no ending, and as new discoveries reveal new wants and new objects, therefore the field for the exercise of inventive genius must continue to expand.

The old Greeks, no doubt, thought they had arrived at the climax of intelligence and perfection in the arts; and the Chinese have considered themselves a finished people, in all things, for centuries, but in learning and in useful science and art, the Greeks were but children to the moderns, and the conservative Chinese—once the furthest advanced in the arts—are now barbarians. A blind conservatism respecting any art, exerts a withering influence: it stops improvements and turns the wheels of industry backwards.

Whenever a want is felt, it is a good plan to let it be as publicly known as possible, and to offer a reward (if this can be done) for its supply. A short time since a prize was offered for improvements on machinery for sawing marble, and in a very short period afterwards the improvements sought were produced.—Our last week's number contained an account of movements now making in Illinois to offer a handsome prize for a useful steam plow. Such an invention—just because it is felt to be a great want—must ultimately be supplied. By such means many useful inventions have been developed, which otherwise would still have been slumbering in oblivion. No nation can stand still in the course of improvement; it must either go forward or retrograde. Every new improvement in the arts, therefore, should but incite to efforts for further progress and the attainment of a higher degree of excellence.

Does the Moon Rotate.

Since we published the article a few weeks since on the above subject, stating that the common opinion of the moon rotating on its axis once in 28 days exactly, had been questioned by an inspector of schools in England, we have received a great number of letters on the subject, all endeavoring to confirm the twenty-eight day rotating theory. To some of these letters we replied on page 334, stating that the arguments presented were not conclusive. Since that time we have again received quite a number of letters on the subject, some of them very ingenious in their demonstrations, and yet differing from one another as to the cause of the moon always presenting the same face to the earth. We have not room for the publication of these letters, even the most acute and able of them, and beside, they would not settle the mooted question. The best way to settle it would be the construction of an apparatus showing the earth and the moon's joint rotations, and the revolutions of the moon around the earth while the latter is rotating 28 times. It would be well to have 28 radii on the wheel which connects the earth with the moon, and to have beads or points on moon and earth, to show their coinciding bearings during the 28 rotations of the earth, while the moon is making one rotation and one revolution.

Testing Natural and Bent Ship Knees.

A series of interesting experiments with ship timber—as noticed by us last week—commenced at the "Novelty Works" this city, on the 16th ult., and were continued daily for six days. They were conducted under the inspection of B. F. Delano, Esq., naval constructor, Brooklyn, and Lieut. Worden, U. S. N., by order of the Secretary of the Navy, and were made at the request, we understand, of R. H. Belden, President of the American Timber Bending Co. The object of the experiments was the testing of the relative strength of natural and machine-bent ship knees; the artificial knees being bent at the factory in Greenpoint, by the machinery and according to the process patented by the well known Thomas Blanchard, Esq., of Boston.

The machinery for testing the strength of the knees was got up under the charge of Mr. Davidson, of the Novelty Works, who conducted the trials. It consisted of a cast and wrought iron bed and frame, in which the ship's knees (one at a time) were secured, and the breaking force applied by a powerful hydraulic press, operating upon one end of each knee, with the fulcrum at or near the center of the throat, the other part of the knee being firmly fastened, to prevent it yielding.

The first experiment was with a machine-bent knee, of 10 1-2 inches siding. With a leverage of 5 feet 4 1-2 inches, it was sprung or squeezed inwards by the press, a distance of 1 inch, by 7,500 lbs. (total pressure); 2 inches by 10,000 lbs.

The experiment with a *natural* knee of 10 1-2 inches siding—same angle as the machine bent knee, and conducted in the same manner—gave a lower degree of strength. It was sprung inward 1 inch by 5,500 lbs. pressure; 2 inches by 9,500 lbs.

The next machine-bent knee of the same siding, 10 1-2 inches, was sprung 1 inch by 9,500 lbs. pressure, 2 inches by 11,000 lbs. pressure.

The next *natural* knee of same siding and angle as the bent knee, was sprung 1 inch by 7,500 lbs. pressure, 2 inches by 10,500 lbs.—These experiments were of the crushing character, operating in the direction to squeeze the ends of the knees together.

The hydraulic press was then reversed, for the purpose of forcing the knees outward—riving them apart. It was an interesting trial, as it had been supposed by many that a knee or stick of artificial bent timber could be easily brought back to its original shape, but it was found more difficult to force it outwards than inwards.

A machine-bent knee of 10 1-2 inches siding, with a leverage of 5 feet 4 1-2 inches was sprung outward 1 inch by a pressure of 14,000 lbs., 2 inches by a pressure of 22,500.

The question was then raised that the pieces of timber which were bolted on the knee to represent the deck beam and the side of the ship as they butted closely together, greatly increased the power required to spring the knee outwards. For the purpose of testing this, the end of the beam was cut off, so that the ends of the timbers were entirely open and clear of each other. The pressure was continued until the knee had sprung outward ten inches, when it was taken off, and it went back five inches. The pressure was then applied the second time, and upon reaching the point where the strain had been taken off at the first trial, it required to spring it 1 inch 28,000 lbs. of pressure, thus showing that it required more than double the power to strain outward than inward. The knee was sprung ten inches without the least break, at a pressure on the last half inch of 38,500 pounds.

The last natural knee of the same angle as the foregoing bent knee, with siding of 10 1-2 inches, was a remarkably fine specimen. With a leverage of 5 feet 4 1-2 inches, it required to spring it outward 1 inch, 22,500 lbs. pressure, 2 inches, 38,500 lbs. pressure; at this point it broke near the center of the throat.

The machine-bent knees proved to possess greater elasticity than the natural ones, and after springing them inwards or outwards some distance, and then allowing them to go back; upon the pressure being applied the second time, it was found, in one trial, that the knee sustained a slightly greater pressure, but in another about six per cent. less.

Recent American Patents.

New Repeating Pistol.—By C. S. Pettengill, of New Haven, Conn.—This invention relates to that description of repeating fire-arms, in which a chambered cylinder is arranged to rotate on an axis parallel with the barrel.—The main object of the invention is to allow the operations of rotating the breech and firing to be performed easily with a simple arrangement of mechanism operated by a single pull on one trigger. The invention consists n certain arrangements and combinations of the parts of the lock, by which the hammer is made self-cocking after every fire, and the main spring is relieved from all strain while the hammer remains cocked. Other features of the invention consist in certain novel arrangements and combination of mechanical devices, by which the rotating of the cylinder, the locking of the same at the time of firing, and the letting off of the hammer are effected. This pistol is one of the most practical and ingenious improvements of its class that we have seen.

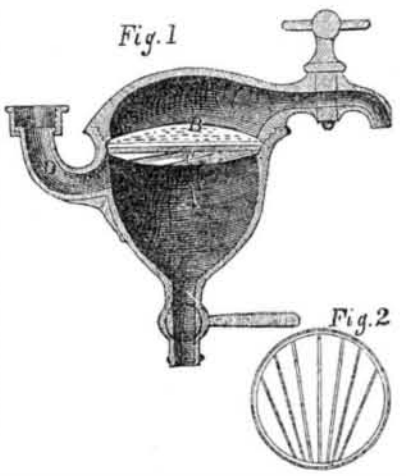
Jingle, Jingle.—Improvement in Sleigh Bells.—By Abner G. Bevin, of Chatham, Conn.—Every body knows how sleigh bells are commonly made—with shanks that are thrust through holes in the leather strap, and secured by a bent wire. The leather on which a string of bells are arranged in the ordinary way, consists, when properly finished, of five parts:—the middle strap, to which the bells are fastened, the back lining strap, which covers the fastening wires, the patent leather front strap, and the two bindings which cover the edg of the whole. The bells must be put on and fastened before the bindings can be sewed. The latter work must be done by hand slowly, because the bells cannot go through a sewing machine. In the other stages of the work the bells are also in the way, and when silvered, as all fine bells should be, become stained by frequent handling before they leave the workman.

The present improvement consists in employing bells without shanks, and attaching them by means of wire staples. Two holes are left in the base of the bell, through which the staples enter, and are then bent together in the interior, forming an effectual fastening. This arrangement does not require the attachment of the bells until after the strap is completely finished. Therefore the work is done more neatly, quicker, and cheaper. Less metal is also consumed in the casting, as the shank and thick parts near it are dispensed with. No handling of the bells is involved, so that they look neater, &c.

With the thermometer at 95°, we find the subject of sleigh bells very refreshing.

Sawing Machine.—By John Broughton, of Chicago, Ill.—Consists in placing the saw within a sliding frame, the back end of which works in ways or guides which form segments of circles, of which the driving shaft is the center. The front end of the frame works between horizontal guides, and the several parts are so arranged that a sliding saw and stationary table is obtained. The saw is pushed up against the stuff, instead of the stuff against the saw. The saw is operated with a small number of pulleys and small amount of belting. The machine is simple in construction, and, we should judge, very effective in action there are no friction pulleys, and the belts work in the simplest manner, by merely passing around the actual driving pulleys. The whole of the working parts are immediately before the eye of the operator, are very accessable for the purpose of oiling, and very likely to attract his attention in case lubrication is required, thus lessening greatly the liability to wear by the parts being concealed, and the neglect of oiling. This is a good improvement.

Improved Water Filter.—By Jas. H. Wright, of New York City.—In this improvement the filter is divided into two chambers, each having a separate stop cock, the arrangement being such that either filtered or unfiltered water may be drawn off at pleasure. The water passes slowly through the filtering machine; hence the convenience of a second stop-cock, through which the liquid may be more rapidly drawn, in case of necessity or when filtration is not required.



A is the shell of the filter. The filtering medium consists of a piece of felt or flannel, or other suitable substance placed between a perforated disk, B, and a barred ring, C. D is the induction pipe, through which the water enters. If filtered water is needed, the lower stop-cock is closed, and the water rises and passes out through the upper faucet. Unfiltered water can be had at any time by opening the lower faucet. The bars in the ring, D, serve to direct the water across and against the bottom of the felt or other filter, when the lower cock is opened, and thus to sweep off and keep the under side of the filter always clean. This is an important feature. One great objection to the use of small filters is their liability to clog up by the accumulation

of dirt on one side of the filtering material. The present improvement overcomes that difficulty, in a great degree. Fig. 3 shows the external appearance, which may be rendered highly ornamental. The invention is applicable to large cistern reservoirs, and the purification of rain water. The form here shown is chiefly intended for city use. Patented July 1, 1856. Apply to the inventor, 835 Broadway, N. Y., for further information.

Improvement in Cartridges.—By George Buckel and Edward Dorsch, M.D., Monroe, Mich.—This invention relates to cartridges for fire-arms whose bore is entirely formed of a number of circular grooves. It consists in the arrangement, side by side, with their axes on the same circle, of several balls of cylindro-conoidal or other partly cylindrical form, of a size to fit the grooves of the bore, the number of said balls being equal to the number of grooves in the bore, so that every groove may receive a separate ball. It also consists in the separation of the several balls by a partition piece of paper or other material for the purpose of preventing their union by fusion when the charge explodes, which, with-

out the partition piece, would sometimes occur when lead balls were used.

When a ball cartridge, constructed as above specified, is fired from a gun of straight bore, it is found that the balls will scatter very slightly; that is to say, they will be confined within a circle of about two feet six inches in diameter when projected to the distance of three hundred paces, thus being very destructive. By giving the grooves a twist the balls will scatter less. It is intended that the gun shall be sighted accurately for one of the grooves that one ball may strike the mark at which aim may be taken. The balls are all thrown about the same distance.

If the piece employed to project the cartridge contains more than four or five grooves, a sufficient space will be left in the center to contain a central ball of greater diameter than the others. The inventors of the above improvement have already patented a number of other valuable and ingenious inventions relating to fire-arms.

Machine for Making Hollow Bricks.—By Ambrose Foster, of New York City, and G. M. Foster, of Fairhaven, Conn.—Consists in the employment of a sliding hopper, plunger, and vibrating box, so arranged and operated that the clay or other mixture is taken from a hopper, pressed into the mold, formed into hollow bricks, pushed from the molds and from the machine, without being touched by the attendants. A good idea of the general principles on which this invention operates may be obtained by reference to the large engraving of Messrs. Buck, published in No. 34 of our present volume. The two improvements are somewhat analagous.

Improved Harvester.—By Stephen R. Hunter, of Cortlandt, N. Y.—Consists in the employment of rotary cutters fitted within slotted fingers, and attached to curved plates, which are hinged together by a joint and fastened to the axle in such a manner that the cutters may be made to conform to the inequalities of the ground. An improvement of this kind has long been needed in many sections of the country.

Fly Trap.—By Joseph Hyter, of Kent, Ind.—Consists in so constructing the trap that the flies, after being decoyed by a bait into it, through a small opening at the front, shall be deluded by a very strong light above, to ascend until they arrive over a trough filled wtth strong soap suds, into which they foolishly precipitate themselves, and are drowned. A gentleman of our acquaintance who uses one of these patent traps says it is a good thing.

Improved Steam Engine.—By William Darker, Jr., West Philadelphia, Pa.—Consists of an oscillating piston arranged within a steam box, which is provided with a partition, and with suitable packing; also with a suitable arrangement of valves and passages. Without drawings it would be difficult to convey an intelligible idea of the construction. Suffice to say that it is extremely simple and cheap in construction, while leakage of steam is very effectually provided against by interposing water between the steam and all the working parts of the engine. The water also serves to lubricate the working parts.

Self-Acting Ship's Pump.—By J. Stever, of Bristol, Conn.—Consists in attaching a series of pumps to a frame, which is secured to a hollow vertical shaft, the latter being allowed to turn freely in its bearings. The pumps communicate with the hollow shaft, and have weights connected by gearing and levers with their pistons, so that the pumps will be operated by the motion of the ship as it rises and falls, or rolls on the sea. The hollow shaft serves as the force and suction pipe. Many plans have heretofore been devised to take advantage of the motion of vessels to pump water from their holds; but this is the most ingenious and practical of any that have come under our notice.

Improved Water Wheel.—By A. Munroe, of Worcester, Mass.—Consists in placing the wheel within a spiral sluice or scroll, having deflecting or guide plates attached to it, for the purpose of causing the water to act in the proper direction against the buckets. Also in having concave buckets attached to the wheels, and inclined plates attached to its arms, whereby the greatest effective force of the water is obtained, and the water so discharged from the center of the wheel as to allow a free and unobstructed current to pass through the spiral or scroll sluice.

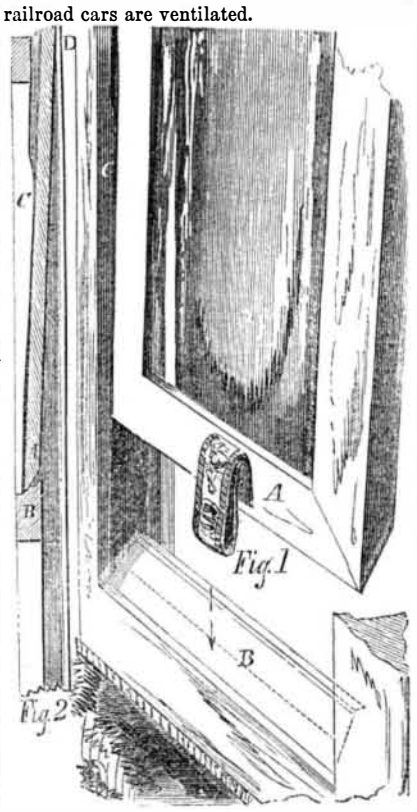
Double-Acting Planing Machine for Metal.—By Joshua Mason, of Paterson, N. J.—Consists in placing the cutter stock inside of a ring, which is hung upon journals within a frame, so that the stock may oscillate therein. Also in operating or adjusting the stock and regulating its position so that the cutter may cut while the bed and work is moving in either direction, and also cut at different hights, according to the formation of the work which it is required to plane.

Roof Platform for Shingling.—By J. W. Rodefer, of Abingdon, Va.—Consists in having a platform hinged to a small angular frame which rests on the roof. The platform is so arranged that it may always be adjusted to a horizontal position, whatever the pitch or inclination of the roof may be. There are spurs in the bottom of the frame, which prevent the contrivance from slipping.

Improvement in Coach Windows.

A variety of means are in use for preventing the rattling of coach and car windows, but hardly any of them accomplished the purpose successfully. Springs and wedges, which are most generally used, have a tendency to bind on the window frames and render them difficult of movement. Alterations in the form of the window have been used, but without much success.

The Paddington, Oxford Street, and other kinds of omnibuses of London, in order to prevent as much as possible the intolerable noise of rattling windows, and the rapid wear caused by their constant vibration, are arranged with half the usual number of windows, the space ordinarily occupied by the other half being used for cases into which the window frames slide latterly. In this way they are, in a measure, partially relieved from the noise, but the bus is rendered dark and gloomy. This plan is also used to some extent in Paris. In the more northern cities of England—Liverpool, Manchester, Birmingham &c.—it is customary to insert plate glass solid into the coach frames, so that they cannot be opened, and depend for ventilation upon openings at the top of the coach, in the form of blinds, similar to the way that some of our railroad cars are ventilated.



Our cut illustrates a plan patented by Thos Silver, of Philadelphia, Pa, June 13th, 1854, and which has been very thoroughly tested in several omnibus lines of that city.

The window sash, A, is beveled at its lower part, and the frame, B, is also correspondently beveled. The frame of the window bulges a little at C, so as to form a bearing for the sash, and the upper part of the sash touches also at D. When the window is closed, therefore, it has three bearings, B, C and D, as shown in section, fig. 2. The bevels of A and B, combined with the other bearings, C D, cause the window to wedge itself firmly, so that it cannot rattle. The weight of the window frame is th s taken advantage of to make it rest firmly in its place, and the necessity of springs wedges or other mechanical device is avoided, and the window frame is left free to be moved when desired, &c.

It is no more expensive to arrange windows on the above plan than upon any other plain method. Any wear upon the bearings can have a tendency only to improve the solidity or firmness of the frame in its seat. The wearing of gutters in the coach body is also prevented.

The improvement is equally useful for all windows that are not balanced by weights, as in manufacturing establishments, where a rattling noise is frequently heard that far exceeds that caused by the machinery, to say nothing of the destruction of glass. For further information address J. W. Harrison, 92 Chesnut street, Philadelphia, Pa.

Notes on Patented Inventions.—No. 16.

Cider Wine.—The wine made from cider at present, however good, is certainly inferior in astronomical relationship to that for which a patent was granted to Jacob Hugus, of Hempfield, Pa., in 1832. It was made by adding five gallons of very strong cider brandy to the barrel of sweet cider, which in the specification is stated "must be made during the decrease of the moon." The moon, we believe, does not influence the planting of potatoes, the making of cider wine, &c., so much as it used to do, when intelligence was less universal.

Self-Igniting Segars.—In April, 1834, John March, of New York, was granted a patent for attaching any of the chemical compounds that ignite by friction to the end of segars, to which was also added a piece of tinder. Such segars had their day. How immeasurably inferior is this plan of lighting segars in comparison with the lucifer match, now so common.

Bronchitis Cure.—Peter Faulkner, of Rockville, Pa., secured a patent in September, 1843, for an elixir to cure that troublesome and somewhat wide-spread disease, bronchitis. It is made as follows:—Two pounds of dried sweet apple bark are boiled in six gallons of soft water until it is reduced to one gallon, and then strained. To this are added 2 1-2 oz. of pulverized jalap, half a pound of nitrate of potass, one pint of spirits of camphor, and half a pound of loaf sugar. All these are well incorporated together, and bottled for use. Mr. Faulkner stated he had discovered that this elixir was excellent, not only for bronchitis, but sore throats, asthma, croup, whooping cough, and dyspepsia. A teaspoonful of this elixir is enough for a dose.

In the last number of the *Medical Reporter.* (Richmond, Va.,) Jackson's "Pectoral Syrup" is described by F. Sterns, pharmaceutist, Detroit, Mich., and he states it to be a favorite prescription with many physicians where he resides. It is composed of one ounce of ipecacuanha, seneka, 3 ounces, refined sugar 2 pounds, sulphate or muriate of morphia, 16 grains, oil of sasafras, 10 miniums. These make two pints of syrup. The ipecacuanha in coarse powder is steeped for fourteen days in a pint of diluted alcohol. The seneka is digested in water, 10 oz., alcohol, 2 oz., at a heat of 104° Fah., for six hours, then strained. This is mixed with the ipecacuanha extract and the other drugs, and the sugar dissolved in them at a gentle heat. From one to two teaspoonfuls is a maximum dose

Burning Fluids.—Many persons suppose that camphene is an explosive burning fluid, but this is a mistake. Camphene is simply rectified spirits of turpentine; its vapor mixed with a certain portion of air, is, no doubt, explosive, but not the fluid. The common burning fluids—known by the names of phosgene, &c.—which burn with a clear flame, emit but little smoke, and are so cleanly to use in lamps, are composed of alcohol and turpentine. Were it not that this hydro-carbon compound fluid is so volatile, so liable to assume the gaseous state, become saturated with the oxygen of the atmosphere and thereby rendered dangerously explosive, it would be preferred to all other fluids for artificial illumination. But dangerous though it is, and in spite of the great number of accidents which have taken place from its use, it goes on superseding all kinds of oils with astonishing rapidity.

To Isaiah Jennings, of New York City, belongs the credit of introducing this burning fluid. In October, 1830, he obtained his first patent. It is described as follows:—To produce light from alcohol and spirits of turpentine, mix unequal parts of them and agitate for a short time; then let them stand a while, when the alcohol will be found combined with a small quantity of turpentine, forming about the eighth part of the mixture. This is drawn off, and is ready for use in lamps with or without wicks. He used wire wicks in some of his early lamps. He claimed a mixture of alcohol and turpentine applied to common lamps.

In March, 1834, Samuel Casey, of Lebanon, Me., was granted a patent for a burning fluid compound, composed of one gallon of alcohol, one pint of turpentine, and half a pound of camphor. This fluid will, no doubt, emit a very pleasant smell, but it has no advantage over common alcohol and turpentine.

In December, 1839, Mr. Jennings secured another patent for a mixture of the oil of whiskey, (fusel oil) spirits of turpentine, and alcohol. The benefits of using the fusel oil is stated to be the saving of alcohol. The use of fusel oil is rather to be avoided, we think

The use of alcohol turpentine burning fluids in common lamps is now public property.—About 9 parts of alcohol to one of turpentine makes a good mixture. They are shaken together, and the clear liquor alone employed. The vessels and lamps containing such a fluid should be kept perfectly air-tight and in a cool place. With care, this fluid may be employed with safety.

[For the Scientific American.]

To Make Ink.

Seeing in your column "To Correspondents" your answer to a communication from C. C., of Ohio, I send you the enclosed circular, which I received from Detroit, in answer to a note "enclosing stamp." If C. C. wishes a good ink let him try this.

1. Take three ounces of best galls and 1-4 of an ounce of cloves, bruise to a coarse powder, and boil over a slow fire in a pint of water for a few hours, stirring frequently; then set aside in a covered vessel till cold; then strain, and supply the place of the water lost by evaporation till it measures one pint. 2. Now dissolve 1 ounce and 1 dram of best copperas in 1-2 pint of water and strain; then dissolve 5 drams of gum arabic in 1-2 pint of water, and add to the copperas solution and 1-2 pint of good cider vinegar. Now mix 1 and 2, and add 1 ounce of liquid blue. Use soft water Let your ink be exposed to the air and you will have a black ink. T. E. K.

Boston, July, 1856.

The Expected Comet.

M. Babinet, a member of the Academy of Sciences, Paris, says that the comet expected the present year is one of the largest comets described by Europeans or Chinese observers, and that its periodical course is three hundred years. It was seen the last time in the year 1556, shining with extraordinaay brilliancy. M. Boune, an eminent astronomer, assisted by Mr. Hind, has gone over all the calculations pertaining to the comet's re-appearance—making a new estimate of the separate and combined actions of all the planets upon this comet, of three hundred years, the result of which is, that in 1858—or somewhere between 1856 and 1860—it will again be visible.

Glass Ballot Box.

A transparent ballot box, made of glass, has been on exhibition at the Mayor's Office, this city. Every ballot, as it is deposited, can be seen. Its object is to prevent *ballot stuffing*, or the introduction of false votes. With corrupt inspectors of election no ballot box is safe.

Southern Wheat.

Some of the planters in the State of Mississippi devoted themselves this season to the cultivation of wheat for the first time, and with great success. Twenty-five barrels of flour, made from Mississippi wheat, were recently sold in Natchez, and were pronounced the best ever sold in that city.