

**New Mechanical Inventions.**

Mr. Geo Bisset, of Quebec, Canada, has invented a Collapsible Core Barrel for casting water, gas, and other pipes. The shell of the core barrel is formed of four cylindrical segments, in pairs of unequal size, the edges of the larger pair overlapping those of the smaller. By a system of wedges and adjusting bolts, these segments are expanded and the loam applied. After the casting has had time to set the wedges are withdrawn and the segments of the shell contract. The inventor claims that much less loam need be used in his apparatus than in the ordinary way.

Mr. J. W. Reed, of Kalamazoo, Mich., has invented an improved Lubricator, having a reservoir mounted upon a stop cock, arranged so that, on steam being let into the reservoir the water condensed displaces the oil and forces it into a tube leading to the parts to be lubricated. Steam may be shut off from the reservoir and the water allowed to run out when it is desired to fill the reservoir with oil; and by turning the stop cock dirt may be blown off by steam.

A Can-Sealing Apparatus, invented by Mr. Thos. Bown, of South Charleston, Ohio, has a rotating table, to which the can is secured by springs, a clamp for holding the cover in place, and a swinging vessel, in which the melted solder or wax are contained, and from which they are poured.

A new Treadle Motion, for operating light machinery, has been patented by Messrs. T. F. Woodbridge and A. P. Gerlach, of Mendota, Ill. There are two pulleys connected with treadles by a single belt, in combination with ratcheted hubs, which act on the pulleys by means of spring pawls.

Mr. E. B. Beach, of West Meriden, Conn., has made improvements in the Bearings of Sheaves and Pulleys, which consist in the adoption of a center pin secured detachably to hanger or block, having a wooden sleeve, which is soaked in oil interspersed between the pulley and pin. This arrangement is especially adapted to such pulleys and sheaves as are much exposed to the weather, and is designed to make them last longer and to obviate creaking.

A Windwheel Governor, invented by Mr. James Phillips, of Jewell City, Kan., consists of an arrangement of levers for turning the wings to and from the wind, and actuated by a disk which, under the pressure of a strong wind, causes the wings to present less surface, and in lighter airs to expose the most effective space. Windmills to which this governor is applied have also a vane to regulate the direction, as usual.

Mr. Royal Beal, of Orfordville, N. H., has invented an improved Lathe for Turning Round and Polygonal Bodies. It has a revolving sectional cutter and slowly revolving cylinder, to which a number of wooden blanks are secured equidistant from the center by chucks. The blanks are turned by ratchets and a spring pawl, so as to expose, after each revolution of the cylinder, a new side of the blanks to the action of the cutter, according to the number of teeth of the ratchets and number of sides to be produced. For turning round bodies the cylinder is thrown out of gear and locked into fixed position.

An improved Stamp Canceler, invented by Mr. H. A. Coats, of Wellsville, N. Y., in addition to the ordinary post-marking stamp, has a rotating canceling attachment which perforates or rubs off the printing of the stamp, so as to disfigure it. The head of the canceling attachment may be made of steel faced with emery, or provided with diamond points.

A combined Tire Bolt Holder and Clamping Tool, for the use of blacksmiths and carriage makers, has been patented by Messrs. F. Norris and C. E. Sweet, of Wappinger's Falls, N. Y. It has a solid frame having a fixed fork at one end, with a screw for adjusting a movable standard, worked by a hand wheel at the other end. The standard has a conical teat at the top for bearing on the tire bolt, a recess with clamp screw for holding the shaft, and a bottom rest piece for securing the clips to their connecting clip bars. The tool is intended to hold tire bolts while their nuts are being screwed on, to couple shafts into position on the axles, for putting on the clip bars of axle clips, and for clamping purposes generally.

Mr. J. J. Anthony, of Sharon Springs, N. Y., has invented an Automatic Car Coupling, having laterally hooked draw bars, which are pivoted to the frames of the car, and are the same for each end of a car. They are caused to engage by springs, and are uncoupled by a lever, which may be actuated by a rope from the engine cab. The hooked portions of the draw bars are made sufficiently deep to answer for freight cars of varying heights.

Mr. Chas. P. Kammerer, of Drums, Pa., has invented an improved Feed Regulator for Millstones, in which the hopper leads to an upright tube having a conical bottom, with apertures at opposite sides of its lower end. A revolving shaft carries wings, which mix the grain and push out heads and straws. A movable sleeve, on the outside of the tube, regulates the size of the discharge openings.

Mr. Frank B. Davis, of Johnstown, Pa., has invented a Nut Lock for securing the nuts and bolts used in fish plates or splice bars of rails. The bolt itself is kept from turning by being made to rest with one side of the head flush against a shoulder on the splice bar. The nut is locked in position by driving a wedge between its lower face and a shoulder upon the splice bar on that side, or upon a washer if preferred. This wedge works in a groove, preventing lateral motion, and is kept from sliding out by having its thin end turned up on the side of the nut.

Mr. John F. Taylor, of Charleston, S. C., has made an improvement in Steam and Hydraulic Presses, which con-

sists in adding as many upright parts as one set of horizontal cylinders will supply, each connected with pipes and having a suitable valve to maintain the pressure while the power is applied to the other parts, by raising which valve the press will be lowered.

A new Machine for Cutting Down from Feathers has recently been patented by Mr. Chas. Ballinger, of White Mills, Pa. The apparatus consists of a revolving drum of wire gauze, with an interior reciprocating stirrer and exterior guide bands, through which the feathers are fed. By agitation the stems of the feathers, being heavier, fall through the meshes at the bottom of the drum, when they are seized by reciprocating grippers and drawn between revolving and fixed knives, which strip off the down from the stems.

Mr. Chas. G. Purdy, of New York city, has invented a Machine for Polishing Mouldings, which has a movable bed for carrying the mouldings, placed upon suitable ways and moved by the mechanical device known as "lazy tongs." The object is to secure the required stroke without complicated machinery, the power being applied by a short lever worked by hand or steam, the motion under the polisher being proportionate to the number of joints in the lazy tongs.

A new Lifting Jack, recently patented by Messrs. S., D., J. & L. Barrow, of Windfall, Ind., is adapted to the gradual lowering of a load as well as lifting, and is so constructed as to be applicable to cider and other presses.

Mr. A. M. Buchanan, of Moberly, Mo., has invented a Lever Power Velocipede, in which the weight of the operator is the propelling power. By throwing the weight alternately upon the foot rests, levers are actuated, and these act upon the driving wheels by cog gearing. The velocipede is four-wheeled, and the steering is done by hand.

Mr. R. J. Parrett, of Albany, Ind., has invented an improved Carpet Stretcher, having a foot piece between two arms, the latter worked independently of each other by separate ratchets, pawls, and levers.

A Fuel Press, intended for compressing straw, corn stalks, and other material into a shape suitable for fuel, is the invention of Mr. Nathan Aldrich, of Alden, Iowa. It has two concave rolls, a feeding funnel, and a discharge tube, in connection with a knife for cutting the material into suitable lengths after it emerges from the press.

Mr. Daniel Border, of Bedford, Pa., has recently patented an improved Lock and Key, the former having two opposite tumblers, one above and the other below the bolt, and the key having a fixed and a movable blade, both of which are upon the same side of the shank when the key is introduced into the lock, but are afterward shifted so that they are opposite and may simultaneously engage the upper and lower tumblers.

**ASTRONOMICAL NOTES.**

BY BERLIN H. WRIGHT.

PENN YAN, N. Y., Saturday, March 2, 1878.

The following calculations are adapted to the latitude of New York city, and are expressed in true or clock time, being for the date given in the caption when not otherwise stated.

**PLANETS.**

Mercury rises.....	H.M. 6 10 mo.	Saturn sets.....	H.M. 6 35 eve.
Venus rises.....	5 20 mo.	Uranus in meridian.....	11 14 eve.
Mars sets.....	11 35 eve.	Neptune sets.....	10 14 eve.
Jupiter rises.....	4 35 mo.		

**FIRST MAGNITUDE STARS.**

Antares rises.....	H.M. 1 22 mo.	Sirius in meridian.....	H.M. 7 57 eve.
Regulus rises.....	4 36 eve.	Procyon in meridian.....	8 50 eve.
Spica rises.....	9 13 eve.	Aldebaran in meridian.....	5 47 eve.
Altair rises.....	2 35 mo.	Arcturus in meridian.....	3 30 mo.
Algol (2-4th mg. var.) sets.....	1 31 mo.	Capella in meridian.....	6 25 eve.
Vega sets.....	4 45 eve.	7 stars (cluster) in meridian.....	4 58 eve.
Betelgeuse sets.....	9 1 eve.	Betelgeuse in meridian.....	7 06 eve.
Fomalhaut sets.....	4 8 eve.	Rigel in meridian.....	6 2 eve.

**REMARKS.**

Venus rises 1h. 14m. before the sun, and sets 16m. before the ending of twilight. She can, nevertheless, be seen, as she has an altitude at sunrise of 13° 15'. As she is only 10 days from inferior conjunction, she will appear as a large crescent, only  $\frac{1}{2}$  of her illuminated disk being visible.

Mars is in *Aries*, nearly in the sun's path, and southwest of the Pleiades about 10°. Jupiter is also nearly in the ecliptic, and is in the constellation *Sagittarius*, 5° almost directly south of the three stars in the horn of the goat. Saturn sets 1h. 20m. after the sun, just as twilight ceases, and 2° 25' 56" north of the sunset point. The southern and illuminated surface of the rings is now presented to the earth, and in a few days we may expect to see them, as they appeared when we last saw them, as two small handles projecting from opposite limbs of his disk. He is fast approaching the sun, being in conjunction March 13.

Algol is at minimum brilliancy March 3, 9h. 26m. evening, setting the following morning at 1h. 21m. 45 sec., 58° 57' 10" north of the west point of the horizon. As Algol is almost in the zenith at southing ( $\frac{1}{4}$ ° south), and as it takes 9h. 9m. for it to pass from the meridian to the horizon, at the time of minimum the star will be about half way between the zenith and the horizon at the point where it will set. It commences to grow dim 1h. 46m. after its meridian passage, or 6h. 4m. evening, and regains its original brilliancy at 0h. 48m. morning of the 4th. Twilight is shortest March 4, after which time it will increase.

SIR THOMAS BIDDULPH, at the request of the Queen, has written to Professor A. Graham Bell, expressing the wish of Her Majesty to purchase the two instruments (telephones) used recently at Osborne. In reply, Professor Bell asks permission to offer the Queen a set of telephones made expressly for Her Majesty's use.

**Fighting the Apple Worm.**

In the SCIENTIFIC AMERICAN of February 16, page 103, appeared an illustration of the codling moth and its larva, the apple worm (*Carpocapsa pomonella*), together with a method of destroying the latter, which consists, briefly, in cutting off the calyx of the fruit, where the moth deposits its eggs, as soon as the apple has attained the size of a hazel or walnut. Mr. P. H. Foster, of Babylon, L. I., writes us that he has tried this plan upon Bartlett pears, which are also infested with this plague, but prefers another mode, which he describes as follows:

"After the worm has entered the fruit and accomplished its damage, the time arrives when it has to leave the fruit and hide itself in a quiet, secure position to undergo the transition from the larva to the pupa state, which requires, in the early part of the season, eight or ten days; after this time the miller is hatched and is again ready to besiege the fruit with its sting. The insect, being two-brooded in this climate at least, if not disturbed, has an aggregating force to do mischief the second time. The progeny for the succeeding year have alone to depend on the security of this second generation of larvæ. As they may often be found in bark of apple trees during winter, my plan of destruction is, about the first of July to take woolen rags large enough to wrap around the trees, and say 4 inches wide. Each week I look over the trees and destroy the worms secreted under the rags, and wherever I find them, until the fruit is off the trees. I have all the green fruit, of every kind, carefully picked up as soon as it falls, thereby destroying many of the curculio as well as the apple worms. In future I intend to poison the rags made use of to capture the insect."

Mr. Foster estimates that the ravages of this pest cause a loss to the fruit growers of the United States fully equal to 5 per cent interest on the national debt, a statement which shows the importance of an effective remedy.

**If the Temperature of our Earth should be Changed.**

M. Dumas, before making known to the French Academy the important results obtained almost simultaneously by M. L. Cailletet and M. Raoul Pictet, on liquefaction of oxygen, read the following extract from the works of Lavoisier ("Recueil des Mémoires de Chimie de Lavoisier; Œuvres de Lavoisier publiés par le Ministère de l'Instruction publique," t. ii., p. 804). This passage shows how the immortal creator of modern chemistry foresaw the facts which have been subsequently realized by Faraday and his successors: "Let us reflect for a moment what would happen to the different substances composing the globe if its temperature were suddenly changed. Suppose, for instance, that the earth were transported at once into a much hotter region of the solar system—into a region where the average temperature were much higher than that of boiling water—very soon the water, and all other liquids capable of evaporation at temperatures bordering upon that of boiling water, and even certain metallic substances, would expand, and become transformed into æriform fluids, which would then become part of the atmosphere. On the contrary, if the earth were suddenly placed in very cold regions—for instance, in those of Jupiter or Saturn—the water which at present forms our rivers and seas, and probably the greater number of the liquids which we know, would be transformed into solid mountains. On this supposition the air, or at least a part of the æriform substances which compose it, would doubtless cease to exist in the state of an invisible fluid for want of a sufficient degree of heat; it would return to the state of liquidity, and this change would produce new liquids of which we have no idea."

**Scientific American.**

No publication comes to our table that is more highly prized than this old, substantial journal. Aside from keeping the public fully posted respecting new inventions and scientific developments, it contains a vast amount of the practical and useful. The engravings are of remarkably high order, and matter accompanying them is so tersely put that such subjects as might, under ordinary circumstances, be considered dry and heavy, are not only readable, but highly enjoyable. It is the best conducted scientific journal in the United States, as well as being typographically the handsomest. As evidence of this it is only necessary to say its circulation is double all the others combined. It is in its 37th volume. Subscription price \$3.20. Munn & Co., 37 Park Row, New York.—*In Door and Out.*

**Nitro-Glycerin.**

MM. A. Sauer and E. Ader give in *La Nature* details of an investigation for the determination of the nitrogen in nitro-glycerin. Their results show that the nitro-glycerin of commerce, such as is contained in dynamite, is not a mixture of mono, bi, and tri-nitro-glycerin as commonly supposed, but is formed exclusively of tri-nitro-glycerin; and second, that the method of decomposition by alcoholic potash does not yield niter alone, but ammonia also, and, therefore, that Dumas's method should be employed for determining the proportion of nitrogen in nitro-glycerin.

**Detecting Glycerin in Beer.**

The German Society for the Encouragement of Industry offers a reward of \$720 for a means of determining (within 25 per cent) the quantity of glycerin contained in beer. Glycerin, it is found, is largely used to adulterate beer, and the brewers, considering that the fact injures their trade, are desirous of a simple and speedy method for its detection.