

bright light of the sun making the light of the fire appear dim? In short, is it not all in your eye?—Eds.

#### New Blasting Powder—Mill Bugs.

MESSRS. EDITORS:—My father, who is in England, thinks I might contribute this little article on blasting powder, to what he truly styles your highly "interesting paper." He has successfully used it in blasting hard quartz, brown hemalite, and iron rock; its superiority consists in being at least three times more powerful than the best blasting powder, comparative freedom from smoke and smell, which is a most important consideration in most mines, and the fact that the two compounds, viz., three of chlorate of potash to one of powdered Aleppo galls, can be kept separate till used, when they must be thoroughly mixed. Economy in price was also in its favor at the time he used it; he managed to obtain the ingredients at wholesale price. In blasting it should be used in cartridges, and a little more caution observed in ramming down the charge at first, as percussion explodes it; though, when the tamping is once laid on the charge with ordinary care, he found no danger. With a rifle no cap is needed if a portion shows itself on the nipple; the hammer will dispatch the ball. I tried one-third of a charge in my rifle, and it dispatched the ball, the nipple also. I thought it had the fault of gun cotton, that of being much too sudden for a rifle. I also tried it in rock without cartridges; it did its work finely.

I have noticed, of late, frequent inquiries as to the best plan to keep mill bugs from flour-bolting cloth. I am a miller, and this is my idea; I think the inside of a bolting chest should be so constructed that no flour can remain long enough to get musty, or get flour worms in it. The gathering boards should be steep, and the conveyer should be made to run nicely in its box; more attention should be paid to finishing a chest of bolts inside than outside; the chest should also be ventilated, so that if the meal is not properly ventilated the steam may escape. The meal had better go through a sifter or be shaken before going into the bolts, to take out barrel nails, elevator caps, or whatever else might accidentally slip in. If these little precautions were attended to it would amply repay.

WM. HILL.

Noblesville, Ind., Oct. 23, 1865.

#### Negative Slip.

MESSRS. EDITORS:—I notice in the SCIENTIFIC AMERICAN of Oct. 21st, page 257, an article headed "Negative Slip," noticed in the trial of the English iron clad ship *Bellerophon*. In explanation of the phenomenon stated, I have thought that it may proceed from the following causes, viz.:—

The average revolutions that the engines make are stated to be less than sixty. Now these revolutions being very irregular, must, undoubtedly, travel a portion of each revolution at a much greater velocity than sixty, and at other parts fall far short of sixty; but the power of the screws, being more than equal to the resistance of the vessel, she is forced through the water at a rate equal to the travel of the screw when at its greatest velocity, and the great weight of the ship having obtained the same speed, moves with a momentum and power sufficient to overcome the resistance offered by the screws at the slower point of its revolution—the resistance being greatly lessened by the water in which the screw is submerged, it being drawn along by its adhesion to the stern of the ship at a speed greater than the average revolutions would give, until the accelerated motion of the screw would again be brought to bear. E. Bangor Me., Oct. 24, 1865.

#### Green and Red Lights on Carriages.

MESSRS. EDITORS:—I am a constant reader of your valuable publication, and have a suggestion to make in reference to lighting the highways on the land, as on the sea, by colored lights. It will not be necessary to have a center or "mast-head" light, only a red light on the left-hand side, and a green light on the right-hand side of your carriage, although the rule is for every one to keep to the right in this country. In dark nights, it will be very convenient, if this rule be adopted, to know the relative position of the vehicles you meet. One advantage will be that, if the rule be adopted on shore, it will be useful to all

who go to sea, as a reminder that "port" side is red, and "starboard" is green.

NAUTICUS.

Boston, Oct. 26, 1865.

#### The Vortex Problem.

MESSRS. EDITORS:—In a late number of your paper an inquiry was made why a vortex was formed over the outlet of an orifice pipe; as, for instance, in a bath tub, when the water is running out. If the water be first started, the explanation will be on the same principle that a ball and string will, if started, wind itself up upon the hand; the ball being attached to the string will, as the string winds up, get nearer the hand, and, consequently, will have less far to go to make one revolution, and thus the momentum, though perhaps not great enough to carry it around in the great circle, is still sufficient to make it revolve in the smaller one. Therefore, as the string is continually winding up, and the ball continually nearing the hand, it will, if the resistance of the air is not too great, continue to revolve until the string is wound up. Now, in the case of the water, each particle of it will represent the ball, the force of the water rushing toward the outlet will be the string, and, the water running out, and thus causing the particles to come nearer the center at every revolution, will represent the winding-up process. Thus, we see this case is analogous to the preceding, and the same reason that will apply to one will apply to the other. I suppose that some slight motion existing among the particles of the water, united to the motion produced by the outlet, causes the vortex to begin, and, once begun, it will continue until the water is exhausted. Such motion could either previously exist, or might be produced by the power of the vessel, which would cause the water, in running to the outlet, to assume a certain direction.

H. A. R.

Troy, N. Y., Oct., 1865.

#### Important Discovery in Painting.

(For the Scientific American.)

Mr. James Trippe, of Orange, N. J., has discovered, after a long series of experiments, an agent, which, when mixed with the white oxide of zinc renders it elastic or flexible as a paint.

As all intelligent painters are aware, the common oxide of zinc is objectionable for outside painting, inasmuch as, by hardening, it peels off in a short time after being exposed to the weather. It is also objectionable for painting ships and steamboats, for a similar reason.

The great objection is that it oxidizes and washes off in a few days after being applied; it is also expensive and brittle.

The "elastic zinc," as the patentee calls his improvement, entirely obviates all of the above objections. It will not become so hard as to fall off like common zinc; neither will it harden under water, or oxidize and wash off like lead. When applied to wood, iron, tin, or any similar substance, it produces a beautiful surface, which will withstand the action of the elements much longer than either lead or common zinc. It is the most durable white paint in use. The price is twenty dollars per ton less than lead, and it will cover fifty per cent more surface.

R.

#### RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

*Machine for Crushing Quartz, Etc.*—This invention relates to a machine for crushing quartz and other hard substances, in which two segments are employed with smooth or corrugated faces, said segments being hung on rock shafts or gudgeons, and connected at or near their peripheries to a lever or other suitable device, in such a manner that, by the action of said lever or other device, a very powerful oscillating motion can be imparted to the segments, and quartz or other materials placed between their faces are crushed with ease and facility. If a lever is used to impart to the segments the desired motion, the crushing power can be increased to any desired extent, and the motion of the segment can be easily adapted to the material to be crushed. Andrew Buchanan, of Brooklyn, N. Y., is the inventor.

*Box for Shafting, Etc.*—This invention consists, first, in the application of a raised or sleeve bearing

to a shaft, instead of turning the shaft down, as usual, said sleeve bearing being made of composition, steel, gun metal, or other suitable material, in such a manner that the shaft, instead of being weakened by the journal, is rather strengthened, and that the bearing, when worn out, can be easily replaced without injuring the shaft; it consists, further, in combining with the sleeve bearing a perforated box, inclosed in an outer shell, intended to hold oil or other lubricating material, in such a manner that a portion of the circumference of the sleeve bearing is continually in a reservoir of oil or other lubricating substance; it consists, finally, in the arrangement of a ball joint on the inner box, and also on the shell, in such a manner that the box or shell is free to accommodate itself to the bearing of the shaft, and entire freedom of motion is effected. John Sparrow, Portland, Me., is the inventor.

*Harrow.*—This invention relates to a new and improved harrow, of that class which is allowed to rotate when coming in contact with any obstruction, and, thereby allowed to clear or free themselves. The invention consists in having a wheel attached to the rear end of the draught pole to bear against a wheel attached permanently to the harrow, said wheel being provided with a central spindle, which passes through an oblong slot in the draught pole, whereby the harrow, under the draft movement, is left free to rotate and clear itself from obstructions. J. D. Parrot, Morristown, N. J., is the inventor.

*Steam Valve.*—This invention relates to a steam valve, which is divided into four distinct parts, two of which are intended to control the supply of steam to the cylinder and two the exhaust, the valve chest being divided into two distinct compartments, one of which contains the supply and the other the exhaust valves. The supply valves are secured each to a distinct and separate valve stem, one of which is hollow and bored out to admit the end of the other stem. The two stems are connected by a spring, and the hollow stem is made with a large loop, through which passes a revolving shaft carrying a cam, which acts alternately on the end of the solid stem and then on a projection on the inside of the loop of the hollow stem, in such a manner that by the combined action of the cam and of the spring which connects the two stems the two supply valves are alternately opened and then suddenly closed, so as to cut off the steam at the desired point. By making the cam movable on the revolving shaft and connecting it to the governor, the cut-off is rendered self-adjusting. The two exhaust valves are connected to a common stem, which is also provided with a loop to straddle a cam mounted on the revolving shaft in such a manner that by the action of said cam and loop the valves are held firmly in the desired position, and suddenly opened and closed at the desired intervals. George Thackray, of Mystic Bridge, Conn., is the inventor.

#### THE JEWELRY MANUFACTURED AT BIRMINGHAM, ENGLAND.

Perhaps no branch of trade better exemplifies the nature of the work carried on in Birmingham than the ornamental jewelers, for which I mean both the real and the sham work, by a great deal of each kind is made. I will not pretend to say which is most largely manufactured; very probably it may be the spurious, but then, let it be remembered, the Birmingham men do not for a moment attempt to palm off their imitation gems and gilt settings as jewels of the first water and pure gold. They simply make these things to get a fair profit, and even in those extreme cases which occurred some years ago, when it was found that some base Turkish coin had been here, the profit was upon the piastres, considered as so many gross of buttons, and the rogues were the subjects of his Ottoman Majesty, who passed the false money. The point is, as I think, that if there are people in the world who will buy a twopenny razor, a sixpenny brooch, or a seven and sixpenny musket, or any other mortal thing that takes a name without having the qualities of the genuine article, Birmingham is ready to supply the demand. There may be those who stamp their razors as "best cast steel," and ticket their jewelry as "all real gold," but these are a style of traders that abound in London quite as much as in Birmingham. From some considerable acquaintance with the workshops and the