high repute for their scented soap: Paris's Old Brown Windsor soap is still and will remain from intrinsic merit a favorite detergent. Pear's transparent soap, invented by the father of the present exhibitor, is worthy of notice; but the firm is prevented from obtaining the full benefit of the invention by the excise duty on the spirit which is necessary for its manufacture; the consequence is that German and American transparent soap is imported into this country, and the inventor is undersold at his own door.

Piesse & Lubin's specimen of cold cream soap is pressed into notice; it consists of a fine curd soap in which the free alkali is nearly all neutralized by the addition of wax and spermaceti.

There is a great variety of other named soaps, from the sublime "sultana" to the ridiculous "turtles' marrow."

DENTIFRICES, &c.

Sections 11, 12, combine the making of dentifrices, mouth-washes, opiates, tooth pastes, breath pastils, nail powder and rouge.

Dentifrices consist principally of antiseptic and astringent substances, and a hard base to act as rubbing material; such as Peruvian bark, cascarilla bark, cassia bark, bole ammoniac, burnt horn, precipitated chalk, charcoal mixed in various proportions with orris root and some peculiar perfume.

Mouth-washes and tinctures principally contain a spirituous infusion of cedar wood, gum myrrh, rhatany or cloves, to which are added otto of roses and peppermint.

EXPORTS AND IMPORTS.

The total value of perfumery exported in 1860 was £274,350.

The average annual importation of some natural productions used by the perfumer for the past five years has been given by Mr. Septimus Piesse in his work, "The Art of Perfumery," as follows:—

Musk	9,388 ounces.
Rose	1,117 "
Vanilla	3,525 lbs.
Ambergris	225 ounces.
Civit	355 "
Orris root	420 cwt.

PIESSE AND LUBIN'S FOUNTAIN OF PERFUME.

Among other goods exhibited is an elegant perfume fountain, designed by Mr. Septimus Piesse, and executed in terra cotta. It represents Christiana, daughter of Linnæus, watering some favorite plants with an arrosoir: the whole figure stands, without plinth, four feet high. The statue is so contrived that water or perfume may perpetually fall from the arrosoir, thus becoming a falling fountain—a pleasing tribute to the great botanist.

The European Iron-Clads at Sea.

England and France have as yet failed to produce an iron-clad frigate which will sail well during sea voyages. The *Warrior*, the *Black Prince* and *La Gloire* were comparative failures, and now the *Normandie* must be added to the same list. The *Normandie* sailed for Martinique, with a picked crew, and La Gravierre, the best admiral in the French service, was on board. She arrived at Martinique, indeed; but the Paris *Temps* admits that, though favored by magnificent weather, the *Normandie* rolled dreadfully—so much so that it was found necessary to constantly keep the guns lashed, to keep the hatches down, and to take every precaution in the cabin at meal times against sudden lurches. In addition, the want of air between decks was exceedingly marked, the ventilators being insufficient.—*Exchange.*

[This is precisely our opinion, and one of the causes which will, we think, prove a serious obstacle to their general introduction. It is unsafe, in the present history of the invention under consideration, to make any prophecies or predictions; these, like curses, come home to roost, but we trust we shall not be found greatly in error if we venture to say that different models of iron-clad frigates from those now in use must be made before they can be pronounced a success. At the present writing they are in no wise so.—EDS.

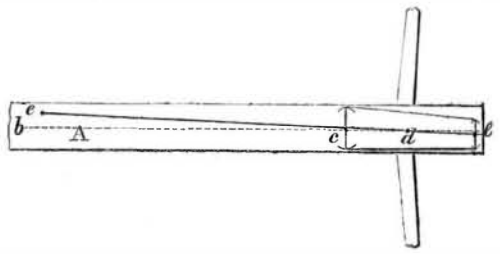
COAL ON THE READING RAILROAD.—If some of the railroads in Pennsylvania have carried but a small quantity of coal this year, it has been otherwise with the Reading line. Last year it carried 1,460,830 tuns; this year it has already carried an aggregate of 2,048,459 tuns.

Correspondence

Setting Carriage Axles.

MESSRS. EDITORS:—In the SCIENTIFIC AMERICAN of November 1st, I noticed the inquiry of Mr. O. N. Chapell, of Prattsburgh, N. Y., respecting the best mode of setting wagon axles to make the wheels run easily. I will give my experience and practice on the subject, and the rule usually pursued in this section of country by wheelwrights for making wooden axles, which are considered the best if put on properly.

The first thing to be ascertained is the dish of the wheel. To obtain this, take a "straight-edge" and lay it against the outside of the wheel, bearing against the felloes; then measure from the middle of the spokes to the edge, subtract half the thickness of the felloe, and the distance is the dish of the wheel.



Suppose the stick, A, is an axle-tree 3 inches by 3½ inches square, the wheels 4 feet diameter, having a hub 9 inches long, and boxes 2¼ and 1¾ in diameter. First snap the line, *b*, in the middle of the stick, and measure 10 inches from the end, and mark a dot as at *c;* from this point mark another dot 4½ inches toward the end. (4½ inches = one half the length of hub and middle of spokes. If the spokes are set "back," measure to the middle, always; if set bracing, take the face spokes which should be straight.) Now mark another point as at *d;* from this point measure toward the middle of the stick half the diameter of the wheel, which in this case is 2 feet, and set the dish of the wheel (previously obtained), toward the top of the stick. Suppose the dish to be 1 inch, set it up from the line, *b*, as at *e*, snap a line from *e*, so as to cross *b* at *d*. This I call the line of axis, on which and immediately above, *c*, draw the size of the larger box, and square the shoulder from the line of axis, also draw the size of the small box 9⅛ inches from this shoulder on the line of axis which falls a little below the line, *b*. Draw lines from the peripheries of these circles, and you have the shape of the top and bottom. To form the right and left side of the horn, snap a line on top of the stick in the middle, set the large box to correspond with *c*, on the side, and the small box to correspond with *e*. It is usual to set the small box about one-eighth or one-quarter (according to the weight of the wheel) of an inch ahead to make the wheels gather a little, it being preferable to have the wheel run against the shoulder instead of the joint-bolt. This should be observed in forward wheels and carts in particular. I put on all my axles by this rule, and they "talk on the road." To set out the left arm, measure 5 feet 5 inches from the point, *d*, and procede the point, *d*. When the arm is finished it should come directly after the middle of the spoke, which should stand plump up from the felloe below.

Iron axles are usually set from a wooden pattern on the same plan. A perfectly straight wheel is to be preferred, and the dish is a little more than half the felloe.

W. H. BENNETT.

Warwick, R. I., Nov. 18, 1862.

Who will Invent a Writing Machine?

MESSRS. EDITORS:—The process of writing is the same that it has ever been; labor-saving apparatus has, I believe, never been applied to it. Is there any reason why the pen may not be driven with great speed and accuracy by machinery as well as is the needle? Cannot the same results which the pen produces slowly be produced with great rapidity by some other contrivance? The printing telegraph apparatus seems to prove that this is possible. Perhaps one of the ingenious readers of the SCIENTIFIC AMERICAN will invent an adaptation of that mechanism, or some better contrivance, that can put thoughts on pape economically, at the speed of ordinary utterance, and in the ordinary characters of our language—legible by all. It is not easy to think of a possible invention which would command more universal use than a writing-machine. It would be used in every legislative hall, in every court-room, in every assembly where reporters are now employed; and it would soon command a very much wider use. For all commercial correspondence—in which "time is money"—it would soon supersede much hand-writing, as the telegraph is superseding much letter-writing. No journalist, no merchant, no lawyer of large practice would be without an apparatus by which a clerk could put words on paper as fast as they were dictated and in a shape in which the document could be used without transcribing. It would make the learning to read and write as fascinating an employment to children as the learning to stitch upon a sewing machine now is, and it would become a necessary part of all educational apparatuses. Perhaps a writing-machine has been tried unsuccessfully; but so have many other things that are now triumphs of ingenuity. Why should it not be done?

A. A.

What an English Ironmaster thinks of Us.

MESSRS. EDITORS:—As I shall not be able to visit New York, it is my desire to submit to the legionary readers of the SCIENTIFIC AMERICAN a few of my views upon what I have seen and thought while on a short "run" from my old home in England to this glorious but now distressed country.

I have been at the seat of war and have seen how a free people can pour out their blood and treasure to save the life of their country—how they can die that their country may live—that immense country which the American people have fondly flattered themselves was to be the refuge of all the oppressed men and women upon the face of God's earth. Never before has the world seen such devotion to a *principle* as I have seen among the hundreds of thousands of soldiers upon the "tented field" and in the hospitals. It touched my heart to see brave men, struck down by the agent of death, suffering patiently, often cheerfully and hopefully to the end. I wish that all my countrymen could have wandered with me among those scenes; then they would better understand the nature of this most dreadful and destructive of all civil wars. They should go into the humble tent of the private soldier—often (in America) an educated and cultivated gentleman—and ask him what he was fighting for, and why he was submitting to such hardships, wounds and death. Then Englishmen would understand why all this "brother-butchery" is engaged in upon such a wholesale scale.

I have also been all over the neighborhood of the great lakes, destined to be the happy homes of millions of free men. I went to the wonderful mineral districts around Lake Superior, and I saw what may be termed mountains of copper, and, more wonderful still, actual mountains of iron almost ready for the iron-worker. God intended all this lake district for a favored people. Iron, the great civilizer, exists in vast abundance; no where on all the habitable globe is the like to be seen. A wonderful commerce is transacted upon the lakes; and I have seen men—not very old ones—who told me they were living here when no steamers and only a very few sailing vessels found employment on those waters.

In passing through the thriving city of Buffalo my old tastes led me to visit the Union Iron Works, which are located on the river by the city; they are among the finest I have ever seen anywhere. There are two very large blast furnaces, using anthracite coal and making about sixty tuns of foundry pig iron per day, which iron is sent to points as distant as Cincinnati, and is sold at from $30 to $35 per tun. These works smelt the pure ores of Lake Superior, some from Canada, others from Oneida county, N. Y., and Lake Champlain. The coal is procured from the great Wyoming coal-field; and the limestone is quarried within the city limits. A very extensive and complete rolling mill is nearly ready for operation; and I was surprised to learn that all its fine machinery was constructed here. I am told that, owing to a want of experience on the part of the projectors of this establishment, their success at the commencement was not flattering; now, however, it is very much so, and it may be regarded as the pioneer to many

others. At the present time it is "coining money."

I will now state some particulars furnished me by an acquaintance engaged in the lake and canal transportation business:—

Lake Superior ore (65 to 70 per cent) costs, on board, $1 50 per tun; Oneida ore (40 per cent), on board, $1 per tun; anthracite coal, delivered here, $4 50 per tun; transportation of ore from Lake Superior, $2 to $2 50 per tun; transportation of ore from Oneida, $1 per tun. Limestone is delivered at about 50 cents per tun; but both ores and transportation charges are likely to be soon lower. We folks in the old country can make no iron of equal quality to this at these figures.

Iron gives power to a people; England is indebted to her power of iron-making for her position in the family of nations; and next to England comes America. I have seen your iron-clad navy—incipient as yet, but growing daily to be a "stern reality." Brave people, work out your destiny!

A Staffordshire Ironmaster.

Buffalo, N. Y., Nov. 17, 1862.

The Gold Mines of California of No Value to the World.

Messrs. Editors:—On page 297 of the current volume of the Scientific American my eye was attracted to an article entitled "The Gold Mines of California of No Value to the World." This is a startling caption and contrary to the general received opinions of mankind. If true, it is difficult to account for the acknowledged aphorism that "gold is the only deity universally worshiped without a single hypocrite." At the conclusion of the article, however, it is admitted that the proposition applies only to that portion of gold used as *currency*, while that portion of it used in the arts does increase the wealth of the world to an extent equal to the excess of its value above the cost of production. Hence I suppose the proposition would stand thus: "The Gold of California used as Currency of No Use to the World." Now the proof of this latter proposition may be shown to be insatisfactory and erroneous. I have always regarded the discovery of the gold mines of California as of incalculable use to mankind; and I do not know that I have any reason to change my mind after reading through the article abovementioned. Admitting that the amount of money necessary to effect the exchange of property or for business transactions is two per cent of the whole wealth of the country, that more than this is superfluous, and that less than this would enhance the value of the circulating medium, I think that no one need necessarily arrive at the conclusion that we should not be benefited by an increase of gold and silver.

There are two kinds of currency in circulation—first, paper money; second, the precious metals. Of these two kinds, paper money constitutes by far the largest portion; while, at the same time, it would be much better were it otherwise. The precious metals are of standard value, while paper currency is of representative value; and if issues of paper are extended beyond the transactions required to be effected, the face value of the paper becomes merely a nominal value, and hence we have a depreciation. Previous to the discovery of the gold mines of California, commerce had much extended, business transactions had increased, and the amount of gold was not sufficient in proportion to paper money in circulation; hence the great benefit resulting from the discoveries both in California and Australia.

The precious metals, being of standard value, should always be in a certain proportion to the amount of paper issued in order to render bank notes safe and give confidence in them as currency. By increasing the amount of specie in circulation we need not necessarily increase the sum total of currency of the country or make it more than the ratio of two per cent of the wealth of the country; for, as the metals are increased, paper money could and should be made to disappear, and in proportion to its disappearance should we be benefited.

It is true that the price of an article is its relative value in regard to some metallic standard, such as gold, silver or platinum; and it is also true that prices must vary with all changes of the relative value of such metals; hence, at one time, a bushel of wheat may be worth an ounce of silver, and at another time two ounces; yet it does not follow, I think, that it would be better for the country if the amount of precious metals was diminished, even admitting that more work could be accomplished with less means or less weight of those metals, for in that case we should have less security for the soundness of our paper currency, which will continue to constitute a great proportion of our circulation as money.

Lastly: I do not see why the gold digger does not increase the wealth of the country, inasmuch as he furnishes a medium of exchange with which he can procure everything that administers to the wants of man, and which is more prized than any of the substantial forms of wealth. W. M.

Fairfield, N. Y., Nov. 24, 1862.

Messrs. Editors:—In your issue dated Nov. 8th (page 297) an editorial was published under the caption of "The Gold Mines of California of No Value to the World," in which it was asserted that all the gold that ever was dug in California (or at least all that has been used for currency) has not benefited and will not be beneficial to mankind. Now, I propose to state some reasons why I think the reverse.

In the year 1847 gold was discovered in California, in consequence of which thousands of young men from the over-populated Atlantic States rushed thither in quest of riches, all determined upon hard labor to accomplish their desires. The first work to be done was gold-mining, aided by little or no science. This vast concourse of miners had to be fed, clothed, provided with suitable tools, &c. Agriculture had demands to satisfy immediately, and then manufactures claimed the attention of moneyed men. Miners by hundreds flocked into the settlements for spades or shovels, boots, provisions and other actual necessaries, and paid their gold in exchange. General prosperity crowned the efforts of thousands of adventurers; and the travel to California became so great that two or more lines of steamers were put upon the route between New York and San Francisco, an extensive railroad was constructed across the isthmus of Panama (costing hundreds of thousands of dollars, and giving employment to thousands of workmen), and, as the State became settled, school-houses were built, churches were erected, manufactures and agriculture flourished. Nearly a hundred flouring mills were in successful operation in California in 1855, and in that year $1,000,000 in breadstuffs alone were exported. In short, everything connected with civilization was brought into operation. If it was worth while to keep millions of money in circulation by the employment of labor in constructing railroads and steamships, in building up cities and towns and making California what she is—a noble State in a once happy sisterhood—then the gold mines of the Pacific *have been* of immense value to the world.

The steam engine theory (in the article referred to) is somewhat cloudy. If an engine costing $10,000 kept more men at work and fed more persons than the getting of $10,000 in gold dust, then the former has been of the greatest value to mankind; but if this engine is standing still, doing nothing, it is like money in a miner's treasure chest will admit, however, that, if this iron monster has always plenty of work to do, and constantly calls to its aid human agencies commensurate to its power, then, of course, it is of much more benefit to the world than all the dormant money in existence—all that which is not employed in some business transaction whereby it will be exchanged over and over again, and thus satisfy the wants of each owner in his turn.

H. W.

Silver Creek, N. Y., Nov. 26, 1862.

[Our correspondent (H. W.) misapprehends the leading ideas of the article in question. It is not to be doubted that the desire to obtain gold in California incited thousands to active labor and enterprise, and developed a vast amount of usefully-applied industry; but the idea inculcated was, that all the gold dug *beyond* that which is required for the arts, and that which is absolutely necessary for the purposes of exchange in currency, is like adding useless weight to a steam engine.—Eds.

The paper mills of the State of Maine are forced to stop manufacturing for the want of rags.

Forgery of Bank of England Notes.

The Bank of England has had another serious alarm. The recent robbery of its water-marked paper from the Tavistock Mills has set the Government of the bank upon the watch for the culprits; but while engaged in this search, the photographic counterfeits of the notes suddenly came up in a shape still more serious than the paper robbery. The London *Review* says:—

A few years ago something was heard of photographic forgeries of bank notes. These were undoubtedly done in a very skillful manner, but, at the same time, no persons who had ever examined a genuine bank note could have been led astray by them; and while it was conceded that the imitation was very good, the idea that photography could ever be seriously employed by the forger was generally dispelled at the first inspection of these photographic imitations. Since then the matter has been lost sight of by the public, and the greatly extended facilities which recent photographic discoveries have placed at the disposal of the forger have been apparently overlooked by those who should be most upon their guard.

It may, therefore, be with some little surprise that the bank authorities will learn that photographic processes are not only known, but are actually in constant operation, by which *fac-similes* of their notes might be produced so perfectly as to defy detection by the most practiced expert. It is admitted that the image of a bank note produced in the camera is as absolutely perfect as the note itself. Every stroke and line, each accidental flaw or secret mark is as easily produced as the most common place design. The optical means employed can, in fact, transfer on to the prepared plate as exact a *fac-simile* of the bank note as would be found on the plate from which the note was in the first instance printed. As far as the negative is concerned, there never has been the slightest difficulty in the way of successful forgery; but so long as the means of reproducing copies from such a negative was confined to the ordinary process of photographic printing, no successful imitation could be expected. Here and there an unwary person might be taken in, but the risk of detection would be far too great to induce any one to embark in this dangerous pastime. Recently, however, discoveries have been made by which it is possible to transfer the negative image from the glass plate in all its minute integrity and exquisite accuracy on to metal or stone; and this once effected, impressions can be worked off in printer's ink of absolutely the same tint and material as that used in printing the original note. The photozincographic process of Sir Henry James, as practiced at Southampton for the production and reduction of maps, and the photolithographic process of Mr. J. W. Osborne, employed for a similar purpose at Melbourne for the colonial Government of Victoria, have each been brought to a sufficiently high state of perfection to render the successful forgery of a bank note mere child's play to any one possessing the manipulatory skill of either of the above gentlemen.

The editor of the *Photographic News*, in drawing attention to the specimens of these processes exhibited in the International Exhibition, gives it as his firm opinion that, by these means, copies of Bank of England notes might be produced which would entirely defy detection. It so happens that these notes offer very especial advantages for imitating in such a manner. The design is clear, bold, and well marked; they are produced, not from engraved plates in intaglio, printed at the copper-plate press (the printed impression of which always presents a slight amount of relief which may be felt by the finger); but by block printing at an ordinary typographic press. Such an impression can, therefore, be imitated by a photolithographer without difficulty, and in such a manner that, if printed on the proper paper, the bank authorities themselves would be incapable of detecting the imposition.

Elias Howe, Jr., the inventor of the sewing machine, carries the daily mail from Washington to the camp of the Seventeenth Connecticut Regiment, in which he is a private.

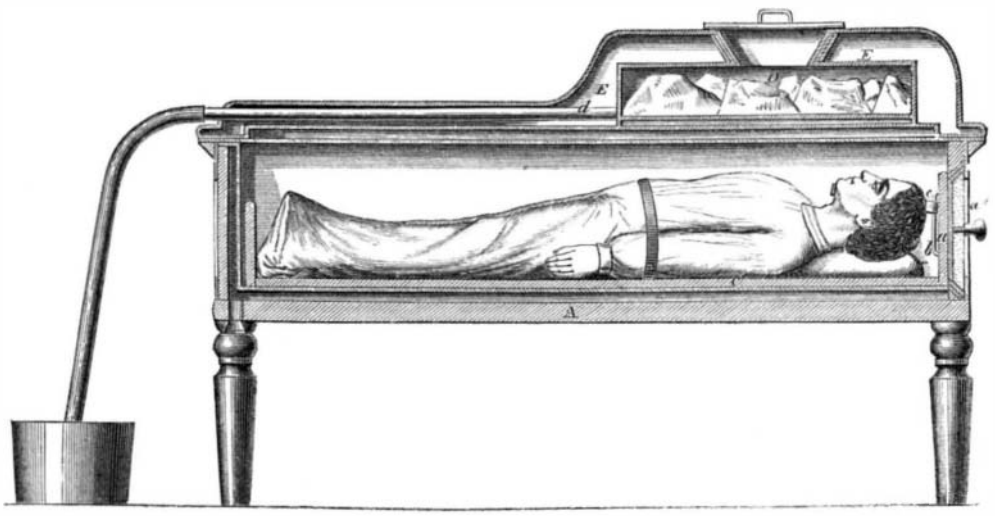
A new volcano has been discovered in a mountain in Iceland, the top of which is covered perpetually with snow.

Improved Corpse Preserver.

Many plans have been proposed to prevent decomposition of the human body after death; of these methods the preservation by cold is the simplest, and for that reason the most popular. A convenient arrangement for this object is herewith illustrated, and may be easily comprehended by reference to the letters.

It consists of a wooden box or case, A, lined with some metallic substance, resting upon legs, so attached that they can be quickly removed if desirable. This box forms the body chamber and should be made so as to exclude the air as much as possible.

The chamber, A, is fitted with a door at one end to receive the cooling board, C; upon this the corpse is laid out, the head piece, *a*, of said board being provided with staples, *b*, to retain a band, *c*, passing around the jaw of the deceased, and thus keep it closed. It will be seen that the door, a^2, is beveled on its faces; these faces are lined with felt or india rubber, so that when it is closed and kept up to its place, a perfectly air-tight joint is made. The walls of the head-piece are double, and a filling of charcoal should be interposed as a disinfectant.



BUNN'S CORPSE PRESERVER.

At the top of the chamber is the ice-box, D, and air chamber, E; these are constructed of thin sheet metal, and so placed that the influence of the cold will act principally upon the parts of the corpse most liable to speedy decay, namely, the bowels and chest. The small pipe, *d*, runs into the refrigerator and discharges the waste water from thence into any common pail or tub. The ice-box and chamber may be made with double walls which can be left in communication with the air space of the body chamber. A continuous circulation is at all times thus maintained.

This apparatus may be made in several sections if desired, so that it can be put up in any place where the doors will not allow of its entrance; convenient access can also be had to view the deceased at all times.

The patent for this invention was procured through the Scientific American Patent Agency, Oct. 28, 1862, and further information in relation to it may be obtained by addressing Lewis D. Bunn, of Morristown, N. J.

WHY A LAMP WICK DOES NOT BURN.

If we take a piece of lamp wicking and place it in the flame of a lamp it is immediately consumed, but the same kind of wicking placed in the lamp and lighted at the top, lasts the whole evening, and if the lamp is supplied with alcohol the wick is not even charred. The cause of this was a perfect mystery until a hundred years ago, when Dr. Black, of Glasgow, discovered the principle of latent heat. As the oil or the alcohol comes near the flame it is evaporated, and by this change in its form a large quantity of heat is destroyed, or rather is rendered latent, so that it does not manifest itself in any way. It requires a great quantity of heat to change a liquid into vapor, so that evaporation always cools surrounding objects. The wick is cooled by the evaporation of the oil or alcohol below the temperature at which it will combine with oxygen—in other words, below the temperature at which it will burn.

Dr. Black's discovery suggested to Watt his great improvement in the steam engine; condensing the steam in a separate vessel from the cylinder. Watt attended Dr. Black's lectures.

A Word about Military Matters.

It does not yet appear to be a part of the Government programme to cut off railway communication between the city of Richmond, Va., and the more southern States. Not one well-concerted effort has yet been made to accomplish this great undertaking—one which, if successful, would do more damage to the enemy than a battle and a victory for the Federal army. To thus isolate Richmond would constitute one of the most splendid achievements of modern warfare. It is said that the Federal army in Western Virginia is preparing to go into winter quarters at the Gauley river, no enemy being near at hand either to annoy or fight. Now, why cannot this very army work its way down to the railway at some point and destroy it? There are, doubtless, obstacles to this movement; but "wherever there's a will there's a way," and it seems to us that if our Government or the commanding officers were in earnest about this matter, a great deal more could be accomplished. We are tired of those shoulder-strap gentry who do nothing. It is said that General Banks (who is now in this city, preparing a most formidable expedition) is pestered continually by applicants for "light and comfortable" situations on his staff—situations where little labor and no risks are required; but the applicants have no objection to an unlimited amount of pay. Gen. Banks has had too much experience to be caught by such fellows. He well knows that the energies of the whole nation are now being wasted needlessly by such leeches. We are glad to know that Gen. Halleck has determined to dismiss them from the service in disgrace and publish their names.

HUTCHINSON'S FAMILY CIDER MILL.

In our issue of November 22d we published a request for a family cider or wine mill, one that should

on demand give down the rich juice of whatever fruit was submitted to its embrace. No sooner had our call gone forth than the response to it came in the shape of the article itself. Mr. C. B. Hutchinson, of Auburn, N. Y., has a combined mill and press, of this sort. We have seen it at work and can give personal testimony as to its efficiency, having had it in operation at our office. All the labor consists in turning the handle to grind the apples into pomace or the grapes into must, as it is applied to either cider or wine manufacture; the juice then flows, by the combined operation of pressing and grinding, in a continuous stream at the rate of nearly a barrel an hour into the tub below. This press can be adapted to a great variety of uses, and seems one of those universal machines which the public need. The family cheese can, by its pressing attentions, be solidified and condensed, the lard extracted from the scraps, the wool crowded into close quarters, and all farm produce that requires any operation of this kind can be compressed with ease. Clothes may be squeezed dry, herbs cured in masses, in fact, the range of its uses seems illimitable. The machine is made wholly of iron, occupies but little room, and weighs about 160 pounds; a stout boy can readily work it. It has been used in a great number of cases, and the inventor assures us that he sold over 100 of them in two weeks, and those who have used them are well pleased with their performances.

The patent for this mill and press was procured through the Scientific American Patent Agency, and an application is now pending for other improvements.—Any further information concerning the sale of the patent or the price of the mill can be obtained from the manufacturer, Mr. C. B. Hutchinson, at Auburn, N. Y.

The Horsfall Gun.—Several inquiries having been made respecting what is called the "Horsfall gun," which first smashed the great iron target in pieces in England, we would state that it is the largest gun yet constructed in Britain, and in some respects it is the most wonderful piece of ordnance ever produced. It has a bore 13 inches in diameter, and the gun weighs four tuns. It is made of wrought iron, and was forged solid at the Mersey Steel and Iron Works, Liverpool, England, and is entirely different from what are called "built-up guns." It is seven years since it was first tried, and upward of 8,000 lbs. of powder have been blown out of it, but the bore appears to be uninjured.

Tinning Metallic Copper.—W. Wollweber, of Frankfort (*Archiv. der Pharmacie*, July, 1862), recommends for still-worms copper tubes tinned inside in the following manner:—To a solution of Rochelle salts a solution of salts of tin is added; a precipitate of stannous tartrate is formed, which is washed and then dissolved in caustic lye. The copper tube, which has first been rinsed with sulphuric acid and then washed, is then filled with the alkaline solution, warmed a little, and touched with a tin rod which causes the deposition of a coat of metallic tin.

Bursting of a Fly Wheel.—A large fly wheel, 20 feet in diameter, at the rolling mill of Rowland & Co., Philadelphia, lately burst while moving at the high velocity of 200 revolutions per minute. It was used on machinery for rolling steel plate for saws, springs, &c. A portion of the wheel passed up through the roof of the building. One young man was killed. The machinery connected with it was broken to pieces before the engine could be stopped. The velocity of a wheel twenty feet in diameter, making 200 revolutions per minute, is over 140 miles per hour.

Dahlgren and Rodman Guns.—We notice that all our daily papers call the new 15-inch navy guns "Dahlgrens." They are really "Rodman" guns, because they are cooled upon the principle invented by Capt. Rodman, as fully explained by us in our description of the Fort Pitt Works, and the manufacture of those guns, on page 393, Vol. VI. (new series), Scientific American.

Dry sheets of photographic paper are now used by traveling artists for taking pictures of scenery. They may be prepared for months before they are used, and may be carried to any part of the world.