and acted on in the same manner, and is then discharged on the back table or endless apron.

Motion is given to the several parts of the machine as follows:—The crank lever has a shaft, I, which has a pinion, K, on it, on the opposite side. The pinion, K, meshes into the wheel, L, which has pinions not seen on its shaft, M, which mesh into the cogs on the ends of the lower cylinders. The end of each cylinder is formed with a cog rim, so that they all mesh together, and impart motion one to the other. The front feed rollers, C C, receive motion from the wheel, L, through the pinion, N. The centre feed rollers receive motion by bands passing over pulleys, H (one not seen), from a pulley on shaft, M.

By operating the crank lever, J, the way motion is communicated to all the parts of the machine will thus be rendered plain. The materials of which this machine is made are not expensive, nor are they of *fine*, *delicate*, and intricate workmanship; if they were, farmers and others might well object to it. It makes very little tow; and produces beautiful broken flax. It can be operated either by hand, horse, water, or steam power. We cannot say how much flax it can break in an hour or a day; that depends a great deal upon the way in which a machine is attended, and the power applied to operate it; it can at least break one ton per day. We have seen the machine operate, and it produced very excellent work.

More information may be obtained, by letter or otherwise, of Mr. Chicester, No. 57 Chambers street, this city.

MISCELLANEOUS.

To Make Hard Water Soft.

Washing.—Dr. Playfair, of England, asserts that the cost of washing is about one-twelfth of the income of a family of small means.—He enters into a computation based on one dozen shirts. Suppose the dozen to cost $18. If only two of them are washed each week at 6½ cents each, the bill for the year will be 6½ dollars; and in three years the washing will have cost more than the shirts. So that according to this computation a garment will have doubled its cost by washing by the time it is worn out, and some articles much more. Dr. P says for every 100 gallons of Thames water, 30 oz., of soap are entirely lost before the hardness of the water is overcome.—Prof. Dewey, in this country, has shown that by the use of unslacked lime, we may render hard water soft.

How to Soften Hard Water.—A half ounce of quick-lime dipped in nine quarts of water, and the clear solution put into a barrel of hard water, the whole will be soft water as it settles clear. This is a practicable and practical recipe or direction. But the precipitate will not be chalk, as the Scientific American states, unless the hardening substance is lime or chalk, which is seldom the case. Common hard water contains gypsum, as well as carbonate of lime or chalk, both of which will be removed by the solution of lime as above.—[Prof. Dewey.

[The above two paragraphs we copy from the same paper. It shows us how careless mere newspapers are about correct news. The reason of this is the general ignorance respecting such questions.

In the first paragraph above, it is stated Prof. Dewey discovered that *unslacked* lime renders hard water soft. In the second paragraph, Prof. Dewey gives credit to the Scientific American, which gives the proportions of *quick-lime*, for rendering hard water soft. The discovery was made by Mr Clark, an English chemist, and he has applied it extensively in the bleaching, printing, and dye-works in Machester, England. So far as the precipitate being chalk, we referred only to waters containing the carbonate of lime in solution, and not to those containing the sulphate of lime.

There is another method which we consider superior to the one described for precipitating lime and rendering hard water sott; it is by the use of salts of soda, which are sold by all the druggists. The way to employ it is to dissolve the soda in warm water, at the rate of one pound to 50 gallons of the water to be made soft, and stir this among the water to be purified, and then let it settle for five or six hours. For the domestic purpose of washing, this is the best way to use soda, the common plan is to mix the soda with the water in the wash tub, by which plan the precipitated lime, &c., (carbonates, chloriates, and sulphates) contained in the water are diffused through the clothes; by precipitating these substances and using only the clear soft water, these impurities are kept out of the wash tub.

To precipitate water that is greatly impregnated with the carbonate of lime, for drinking purposes, the quick or burned lime is the best substance to use.

New Galvanic Battery.

The following is an account of a new galvanic battery described in the London Atheneum:—

"On the 24th ult., a party of scientific gentlemen were invited by Mr. Martyn Roberts, to witness a voltaic battery of new construction, and professedly of great economy, which he has at present in action in the neighborhood of Great Portland street. The battery consisted of fifty plates of tin about six inches by four,—each plate being adjusted between two plates of platinum of the same size.—These were placed in stone-ware cells about two feet deep, which were filled with diluted nitric acid. The object of these deep cells was, to obtain a marketable product which should be sufficiently valuable to cover the cost of the agents employed to effect the development of electricity. The upper stratum of nitric acid acts on the tin, and forms with that metal an oxide, which falls off from the plate the moment it is formed, and is precipitated as a hydrated oxide of tin to the bottom of the cell. This oxide is combined with soda; and as stannate of soda is extensively employed in dyeing and calico-printing; it is stated that this product will yield a profit of 20 per cent. on the cost of the battery but this is a point which we are not at present in a position to determine. The electrical action of the fifty pairs of plates was considerable. The current was employed to exhibit the electrical light, and the effects produced were certainly very brilliant. It was not possible to compare it with the result obtained from a Grove's battery, but we judge their powers to be nearly equal. An experiment made on the decomposition of water gave about 27 cubicinches of the mixed gases, oxygen and hydrogen, per minute. We cannot but regard this very ingenious arrangement as an improvement on the ordinary batteries, as far as economy is concerned, where an electric current is required, since the stannate formed must always be of considerable commercial value. It is curious, too, that the stratum of fluid in the immediate neighborhood of the voltaic plates is kept uniformly of the same specific gravity, notwithstanding that the acid is rapidly removed. The oxide of tin formed takes down water with it, and at the same time establishes a current by which fresh acid is applied to the plates. We were informed that the battery continued in most uniform action for sixteen hours."

A Yankee over the Crater.

A correspondent of the "Boston Transcript," writing from Naples thus describes an amazing interview with a live Yankee:—

"The other day, on reaching the top of Vesuvius, I discerned a man sitting astride of a block of lava. I don't know why, but I marked him at once for one of my countrymen. As I advanced toward him I could not help noticing the cool manner in which he and Vesuvius were taking a smoke together. His long nine was run out like a bowsprit, and he took the whole affair as calmly as one would look at a kitchen fire at home. As soon as I came up with him he bawled out, 'Hallo, stranger! Any news from below! You aint tuckered out yet—be ye?' On my asking him if he had looked into the crater, he replied, 'Yaas! but I burned my trowsers, though, I tell *yew*.'

He turned out to be a man from New England, who came up from Marseilles to see the volcano.

Recent Erected Houses.

The London Medical Times directs attention to the circumstance of many diseases occurring in consequence of newly built houses being too quickly inhablted. He says, that in various parts of the outskirts of London, a large number of new dwellings are constantly being erected, and scarcely are they completed before they are occupied. Five cases of cholera which proved fatal to persons who had recently taken newly built houses, came under his superintendence, which he considered were produced by the exhalations from the damp walls and floors and the fresh paint. We believe that newly built houses, when too quickly occupied, exert a very baneful influence on the health of the occupants. From the fresh materials which compose the dwellings, deleterious exhalations arise, contaminating the air. Houses ought not to be inhabited for a certain period after their completion; and our medical brethren should caution those within their influence, of the dangers to which families are exposed by living in houses recently erected.

Scientific Memoranda.

Dr. Krapf, and G. Robmann have received silver medals for the discovery of a new snowy mountain in Eastern Africa three degrees south of the equator.

A new respirator has been invented in England for the benefit of coal miners. It consists of a cylindrical vessel for puryfying the air; it contains caustic lye composed of lime and soda water.

Liebig is going to leave the University of Giessen, which has been rendered famous by his labors. He will take up his residence at Munich. He has written to a gentleman in London about the adulteration of pale ales with strychnine as a substitute for hops.—He denies the imputation of the poison in English ales, and says the English brewers are better than those of the continent of Europe. The employment of strychnine would at once be detected by its speedy ill effects, and the adulteration by such a drug would not be resorted to.

Mr. Mayal, in London, produces daguerreotypes of full life size.

McCosh, the author of the celebrated metaphysical work on the Divine Government, so well known in this country, was a candidate for the chair of Moral Philosophy, in Edinburgh University. He has withdrawn his name, and says he expects to find much pleasure in his situation in Belfast College.

Mr. J. R. Hind has discovered a planet which he describes as the fifth discovered during his systematic examination of the zodiacal heavens. He writes, under date of June 25, to the "Times:"

"At 12h. 30m. mean time, last night, I discovered a new planet on the border of the constellations Aquila and Serpens, about 5° east of the star Tau in Opinchus. It shines as a fine star of between the eighth and ninth magnitudes, and has a very steady yellow light. At moments it appeared to have a disc, but the night was not sufficiently favorable for high magnifiers. At 13h. 13m. 16s. mean time, its right ascension was 18h. 11m. 58·8s., and its north polar distance 98° 16′ 0·9″.—The diurnal motiou in R. A. is about 1m. 2s. towards the west, and in N. P. D. two or three minutes towards the south."

A French gentleman states that he has been enabled to prevent incrustations in steam boilers by placing 2 lbs. of the proto-chloride of tin daily in a boiler which works 12 hours per day, at a pressure of the atmosphere, and evaporating 1,500 quarts of water.

The best solvent of india rubber is a mixture of 100 parts of the sulphuret of carbon with 6-8 parts of alcohol free from water. The india rubber liquifies rapidly, producing a clear solution which may be precipitated again by the addition of twice its bulk of alcohol. The precipitate treated with a fresh quantity of sulphuret of carbon re-dissolves, yielding a purer solution. India rubber paste is obtained by feeding 95 parts of sulphuret of carbon with five parts by measure of common alcohol. The india rubber is steeped in this until it becomes a paste. India rubber threads can be stretched six times their length when cold, and double that when heated to 212°.

Home Sweet Home.

We see it stated in a great number of our exchanges that John Howard Payne, who recently died at Tunis, Africa, was the author of the beautiful song, Home Sweet Home.—Why the song was old a hundred years before he was born.

Fire-cracker Nuisance.

The Fourth of July is signalized by more intolerable nuisances to sensible people than any other day in the whole year. Crackers, pistols, cannons, &c., are employed that on day for the independent action of all those who have not sense enough to know how to use them in decency. All quiet persons flee the city that day as they would a plague. It is high time that parents were becoming more sensible in the teaching of their children how to keep Independence Day, and it is high time for all grown up people to throw off their children's clothes on that day as well as on other days. Let Independence Day be celebrated in a sensible manner, and not in the absurd, foolish, and noisy manner in which it is usually kept.

(For the Scientific American.)

Iron Structures---Oriental Style.

In your excellent paper, which I read very regularly, in our office here, I find an article on "Iron Structures,"—you express surprise that the valuable improvements of Mr. Bogardus are so little appreciated. I think you might suggest a change of construction in connection with the use of iron, which, if not suitable to New York (though I doubt that), might be well suited to the "Sunny South." Coolnes is to be obtained most readily by shade, and by abundance of water. Why not build houses after the Eastern fashion, but higher, one room deep round a court or small garden, with galleries to each floor, of iron? A fountain or two should decorate the centre, with water ever flowing, and jets, at the sides and corners. For the richer classes, delicious residences might be thus constructed, light and graceful in architecture, cool and refreshing in the hot season, and fragrant with the choicest flowers and shrubs; while vases and statuary might show their graceful proportions by the orange and the lemon, and prove the taste and discrimination of the owner. Balls and fetes in such residences would be everything that one could desire. I do not see that in such structures we need cling to the Grecian or Roman in architecture—an ample field for the ingenuity of American architects would be open, and the architectural riches of the East would furnish an almost inexhaustible store of light and graceful designs. C. L. A.

Washington, D. C.

Lepidopterous Insects.

The pine forests of Germany are exposed to the ravages of various lepidopterous insects, such as *smerinthus pinastel*, and in particular *gastropacha pini*. Now, a pine tree once stripped of its leaves, or needles, as the Germans term them, does not recover like an oak or sycamore, but dies. Many hundred acres of the finest are thus often destroyed in one district. It is an interesting sight to any but the owner, to visit a forest under the infliction of *gastropacha pini*; the thousands of caterpillars, eagerly feeding, produce a distinct crackling sound as the hard dry pine leaves yield to their persevering jaws. The large moths fluttering lazily about, or perched on the leafless sprigs, await the approach of evening, when the gamekeeper kindles large fires in the open spaces. Into these multitudes of the moths fall and are consumed; but this, with all that are destroyed by hand or devoured by birds, would avail but little, but for the services of various insects. Among these the Calosoma is one of the most active; both larvæ and beetle mount the trees, and slaughter moths and caterpillars far more than is requisite to satisfy their appetite.—Those seasons in which the pine moth is most numerous are also remarkably favorable to the calosoma, and to several kinds of Ichneumons, which also prey upon the Gastropacha.—[Jones' Natural History of Animals

Erratum.

In our notice of the pneumatic method of blasting rocks in our last number, it should have stated that the vitriol is to be placed only at each cell; the pressing of the air bag deposits the acid on the charges.