

New Form of Dry Per-sulphate of Iron.

The following is from the *American Journal of Pharmacy*, communicated by Dr. J. Lawrence Smith, of the Louisville (Ky.) Chemical Works:—

"The use of the per-sulphate of iron has been very much extended in the last few years, and various formulæ have been proposed for making it, all of which are very good. But it is not in forming the solution that there is any thing needed, but it is the transformation of it into a solid that is most desired. Some have dried it on plates in a hot-chamber, and others have dried it by the direct application of heat, giving it a porous structure not unlike tannic acid when first dried. I have given to it these forms successively, but they all have objections. Heated on plates, if the temperature be too light or continued too great a length of time, a portion becomes insoluble, other forms are deliquescent and soon become moist in contact with the air. Having succeeded in drying it into an almost impalpable powder unalterable in contact with the air and very soluble in water, I propose describing, as near as possible, the method by which this is arrived at. As regards the solution of per-sulphate I am not very particular about the the formula, preferring, however, one proposed for Monsel's per-sulphate (sulphate of iron, 100 troy ounces; distilled water, 2 gallons; sulphuric acid, 5 troy ounces; nitric acid, 5 troy ounces or q. s.), for per-oxidizing the iron, when the whole is brought to the boiling temperature. The manner of doing this is familiar to all operators. The solution is allowed to cool somewhat, then filtered and concentrated to a density of 1.60. It is now allowed to cool and poured into shallow plates to the depth of one-sixteenth or one-fourth of an inch, and a little of the dry powder obtained from a previous desiccation is scattered on the surface of the liquid in each plate. The plates are then placed on shelves in a part of the laboratory where a little steam is escaping and the temperature is from 75° to 100° Fah., according to the season.

"In my works shelves are constructed two or three feet above a series of steam jackets in which live steam is used, and always more or less escaping from the sides of the jackets. In from twenty-four to forty-eight hours the contents of each plate begin to rise in cauliflower excrescences that after a little longer exposure become dry, and rub down between the fingers to an impalpable powder; and when rubbed down and passed through a tolerably fine iron sieve, it has very much the appearance of mustard. It can be exposed to the air without its absorbing moisture or undergoing any alteration. When thrown into water the water becomes turbid, but in a few moments clears up, affording a red solution. It is soluble in a very small quantity of water. When it is desired to use it in the solid form as a styptic, it can be taken in the fingers and scattered on the wound or other surface as any other powder may be applied. This manner of drying a substance considered deliquescent doubtless appears a very singular one, and it certainly was not suggested by any train of reasoning, but discovered altogether by accident, and I have tried to bring about the result by other arrangements; but the solution placed on shelves in the same room not more than ten feet off, but not exactly under the same condition of vapor and temperature, acts entirely differently; the solution, instead of drying, becomes more dilute from absorption of moisture. In the drying-room proper it solidifies into a hard mass."

The Western Iron-clads under Fire.

Chief Engineer John W. Hartup, of the iron-clad *Tuscumbia*, is responsible for the following statement of the manner in which his vessel stood fire at Grand Gulf, Miss.:—

"The engagement lasted five and a half hours. The *Tuscumbia* received eighty-two solid shots, and it is impossible to count the shells that exploded in her. The upper work is a perfect wreck. No man could have lived on her deck for a minute. It is believed here that we were under the heaviest fire ever known in naval warfare. The rebels concentrated all their fire on us for at least two hours. More than one-half the time during the fight we were not more than fifty yards from the muzzles of thirty guns, and some of these guns were 100-pounder Parrotts—a gun which throws projectiles with greater force than any gun

now in use. But all would not do. They could not penetrate the iron sides of the *Tuscumbia*. We received more shots than all the other vessels combined; but our plating proved perfectly invulnerable against all efforts to penetrate it. There was one great blunder committed in building the *Tuscumbia*, and that is in the location of her magazine. To give you an idea of this, I will just say that in action the hatches of the magazine are necessarily left open. When the shell exploded in her turret the fire from it badly burnt the face of the boy who was stationed at the door of the magazine to pass powder up. This will be altered before the vessel is pronounced fit for action again. You must not think that the *Tuscumbia* is disabled beyond repair. She will soon be ready to 'go in' again. We took 490 prisoners. Since the fight we have buried three men, who died from the wounds received, making, in all, eight killed."

Autograph Letter of Benjamin West.

We find the following in the *San Francisco Bulletin*:—"An interesting memento of the celebrated American painter, Benjamin West, in the form of an autograph letter, is now in this city. This letter is dated Newman street, London, March 20, 1813, and is addressed to Joshua Shaw, an eminent painter, then residing in Philadelphia. In this letter Mr. West mentions that his great painting of 'Death on the Pale Horse' was then on successful exhibition in London; also, the pleasure which the reception of his gift to the Philadelphia Hospital—his painting of 'Christ in the Temple'—had given him. As a remembrance of Benjamin West, who has been often called the 'father of American painters,' this letter is very valuable; and its possession has been much desired by various literary institutions in the Eastern States; but the descendants of Mr. Shaw (of whom there are several in this city) value it greatly as a family heirloom. Joshua Shaw was quite a notable painter in Philadelphia. He was the inventor of many improvements in gun-locks, and also the inventor of the percussion lock and cap, and a water primer for cannon. These inventions were adopted by the United States Government, from which a large amount is now due to the heirs of Mr. Shaw, who died in 1860."

Hints on Bread-making.

Good bread cannot be made by merely mixing flour and water and yeast. The mass must be kneaded so as to be sure and bring every grain of flour in contact with its equivalent grain of water, and so as to diffuse the yeast uniformly throughout the mass, or else the resulting gas will be liberated in excess in one spot and not at all in another. This is seen in badly-kneaded loaves—in the holes they contain and in a crust that easily detaches from the crumb, as though it had been lifted up by internal force. The air cells in a well-kneaded loaf are fine and uniform throughout the mass and all will be formed at the same time. If the flour and yeast are decidedly good and the kneading decidedly bad, the bread will not give satisfaction. On the other hand, good kneading, good molding and good baking, will make a second or third-rate quality of flour almost equal to the best.

MISCELLANEOUS SUMMARY.

AXLE-BOXES and pistons are stamped out, in Germany, from solid heated blocks of iron; and in England the driving wheels of locomotives are stamped out from solid plates. Hydraulic pressure is employed for operating the punching machines.

TO GIVE HAM A SMOKY TASTE.—Ham that is deficient in the smoky flavor may be improved by dipping it in tar vinegar before broiling it. Tar vinegar is made by taking equal parts of both substances and pouring the vinegar on to the tar. After a few minutes of contact pour the vinegar off and use as above.

SOME idea may be formed of the tremendous consumption of the munitions of war, which the rebellion has occasioned, by the fact that the Waterbury Cap and Flask Company alone made, during the past year, over 100 tons, or 200,000 lbs., of copper into percussion caps.

THE head of a carrot, if cut off a little below the top and put into a basin of water, will send out leaves, and make a handsome ornament.

MR. L. A. EDGELL, of Burlington, Vt., is now engaged in the manufacture of tar and turpentine from pitch pine stumps—an enterprise which was started last fall. He expects shortly to be able to turn out over 300 gallons of tar and 100 gallons of turpentine per week. The distillation also produces, in considerable quantity, pyroligneous acid, a substance used in print mills for setting colors.

GREAT BENEFITS OF LABOR-SAVING MACHINERY.—By the aid of improved machinery, one man can now spin four hundred times more cotton yarn than the best cotton-spinner could in 1769, when Arkwright took out his first patent. In grinding grain and making flour, one man can now do one hundred and fifty times more work than he could a century ago. One woman can now manufacture as much lace in a day as a hundred women could a hundred years ago. It now requires as many days to refine sugar as it did months thirty years ago. Only forty minutes are now required to fix an amalgam of mercury and tin on a large looking-glass, which once occupied six weeks. The engines of a first-class iron-clad frigate perform as much work in twenty-four hours as 42,000 horses.

NEW YORK MARKETS.

The following is a statement of the wholesale prices of certain articles of commerce in New York on the 10th inst.:—

Coal.—The price of anthracite coal ranges from \$7 to \$8 per ton of 2,000 lbs.

Coffee.—Coffee costs from 20½ cents per lb. for inferior St. Domingo to 37 cents for Java; the retail price of the latter is 40 cents.

Copper.—Sheathing is 42c. per lb.; ingot 30½c.

Cordage.—American tarred cordage is 16c. per lb.

Cotton.—The price of cotton varies from 38c. to 61c. per b. for "mid-ling fair."

Domestic Goods.—Brown shirting costs from 23c. to 25c. per yard; bleached heavy shirtings, 24c. to 28c.; brown sheetings, 24c. to 25c.; bleached sheetings, 24c. to 25c.; bleached drillings, 25c. to 30c.; narrow cloth, all wool, \$1 50 to \$2 75; cassimers, \$1 06 to \$1 50; satinetts, 75c. to 85c.; cotton flannel, 25c. to 30c.; woolen flannel, 75c. to 85c.; printing-cloth—narrow and wide, 9c. to 11c. The variety of cotton and woolen cloths is so great that we do not specify each sort. At present the prices of cotton goods are lower than they were a month ago. Several of our large cotton factories that were engaged in the manufacture of fine goods have been closed for several months. It is expected that prices will rise, unless cotton falls.

Flax.—The price of flax ranges from 16c. to 22c. per lb.

Flour.—Flour ranges from \$5 25 to \$9 25 per barrel; rye, \$4 to \$5 25; corn meal, \$4 to \$4 58. Considering the great rise in the price of most articles, flour is comparatively cheap.

Grain.—Wheat is selling at from \$1 22 to \$1 75 per bushel; the lowest is Western spring wheat; the highest Missouri winter.

Hay.—Hay is selling at 90c. per 100 lbs.

Hides.—Green salted sells for 13c. per lb.; slaughter, 9½c.; dry Rio Grande, from 20c. to 25½c. The prices for foreign hides have a very great range.

Hops.—Hops of last year's crop are sold at from 18c. to 22c. per lb.

Iron.—American pig iron is selling at from \$33 to \$34 per ton; Scotch pig iron, \$33 to \$34; English bar iron, \$76 to \$75 50; sheet-iron ranges from 5½c. to 6½c. per lb.

Lead.—"Galena" costs \$8 50 per 100 lbs; English refined, \$8 50; pipe and sheet, 12c. per lb.

Leather.—Oak-tanned sole-leather ranges from 25 to 40 cents per lb.; hemlock tanned leather ranges from 23c. to 27c.; rough upper leather at 40c., and fine as high as \$1.

Molasses.—This article is selling at from 42c. to 50c. per gallon.

Nails.—Cut nails cost from \$5 to \$5 25 per 100 lbs.; horseshoe nails, 26c. to 30c. per lb.

Naval Stores.—The price of turpentine spirits is \$3 40 per gallon; rosin costs from \$22 to \$32 50 per barrel of 230 lbs.

Oils.—Lamp oil is selling at \$1 18 to \$1 20 per gallon; whale at 88c. to \$2; refined petroleum, 50c.; lard, 85c.

Paints.—White lead, pure, ground in oil, costs 11c. per lb.; dry, 10c.; zinc white, in oil, 8c.; red lead, 11c.

Provisions.—Some mess beef is selling as low as \$4 50 per barrel; the best India as high as \$33; Pork costs from \$10 to \$15 50 per barrel; hams from 4½c. to 10c. per lb.; butter, from 16c. to 30c.; cheese, from 8c. to 11c.

Rice.—East India, dressed, sells at from \$5 25 to \$6 25 per 100 lbs.

Steel.—The price of English fine steel ranges from 20c. to 29c. per lb.; German, 10c. to 17c.; English spring, 8c. to 15c.; American blister, 5½c. to 6½c.

Sugar.—Sugar ranges from 7½c. to 15c., per lb., for "Stuart's loaf."

Tea.—The price of tea varies from 55c. to \$1 35 per lb. The names of all the teas at present offered for sale in the New York markets would fill a column of the *SCIENTIFIC AMERICAN*.

Tin.—Tin costs from 50c. to 55c. per lb.; charcoal plates from \$8 50 to \$12 50 per box.

Tobacco.—Tobacco is selling at from 12c. to 90c. per lb. for plugs; cigar tobacco from 45c. to \$2 per lb.

Wool.—American "Saxony" fleece can be bought at from 80c. to 82c. per lb.; Merino, 65c. to 90c.; California (washed and unwashed), 25c. to 50c. Foreign wools range from 18c. to 60c. per lb. There has been and there is still a great demand for wool. All the woolen cloth and flannel factories are driven to their utmost speed, and several of them are running day and night.

From the 1st of June up to the 10th inst. 4,035 bales of cotton arrived in New York. The increased receipts have been from the Department of Gen. Banks in Louisiana.

The "longshoremen" of New York are on a strike for wages. The wharves at which the California vessels lie are crowded with freight; but the longshoremen seem to rule that department, as they will not permit any one to put freight on board.