For the Scientific American.

Japanning.

(Continued from our last.)

BLUE JAPAN GROUNDS.

Blue japan grounds may be formed of bright Prussian blue. The color may be mixed with shellac varnish and brought to a polishing state by five or six coats of varnish of seedlac. This varnish, however, is apt to give a greenish tinge to the blue, as the varnish has a yellowish tinge and blue and yellow form a green. Whenever a light blue is desired, the purest varnish must always be used.

SCARLET JAPAN.

Ground vermillion may be used for this, but being so glaring, it is not beautiful unless covered over with rose pink or lake, which have a good effect when thus used. For a very bright crimson ground, safflower or Indian lake should be used always dissolved in the alcohol of which the varnish is made. In place of this lake, carmine may be used, as it is more common. The top coat of varnish must always be of the white seedlac—which was described in a former article—and as many coats given as will be thought proper—it is easy to judge of this.

YELLOW GROUNDS.

If turmeric be dissolved in the spirit of wine and strained through a cloth and then mixed with pure seedlac varnish, it makes a good yellow japan. Saffron will answer for the same purpose in the same way, but the brightest yellow ground is made by a primary coat of pure chrome yellow, and coated successively with the varnish Dutch pink is used for a kind of a cheap yellow japan ground.—If a little dragon's blood be added to the varnish for yellow japans, a most beautiful and rich salmon colored varnish is the result, and by these two mixtures all the shades of flesh colored japans are produced.

GREEN JAPAN GROUNDS

A good green may be made by mixing Prussian blue along with the chromate of lead, or with turmeric, or orpiment (sulphuret of arsenic) or ochre, only the two should be ground together and dissolved in alcohol and applied as a ground, then coated with four or five coats of shellac varnish, in the manner we have already described in a former article — A very bright green is made by laying on a ground of Dutch metal, or leaf of gold and then coating it over with distilled verdigris dissolved in alcohol, then the varnishes on the top. This is a splendid green, brilliant and glowing.

ORANGE COLORED GROUNDS.

Orange grounds may be made of yellow mixed with vermillion or carmine, just as a bright, or rather inferior color is wanted.—The yellow should always be in quantity to make a good full color, and the red added in proportion to the depth of shade If there is not a good full body of yellow, the color will look watery, or bare as it is technically termed.

PURPLE JAPAN GROUNDS.

This is made by a mixture of lake and Prussian blue, or carmine, or for an inferior color vermillion, and treated as the foregoing.

When the ground is laid on and perfectly dried, a fine coat of pure boiled nut oil then laid on and perfectly dried, is a good method to have a japan not liable to crack. But a better plan is to use this oil in the varnish given —the first coat—after the ground is laid on, and which should contain considerable of pure turpentine. In every case where oil is used for any purpose for varnish, it is all the better if turpentine is mixed with it. Turpentine enables oils to mix with either alcohol or water. Alkalies have this property also.

(To be continued.)

The society of Block printers in London, has lately presented Queen Victoria with a piece of muslin delaine printed by hand. It was a most splendid article.

For the Scientific American.

Receipt for an Ash Vat for Dyeing Indigo Blue.

Fill the vat with clean water; then put fire to heat it and put the dye stuffs in at once, as follows: To one pound of indigo allow three pounds of the best pearl ashes, and 8 ounces of madder to every pound of indigo; after they are all in stir well up with a rake; when that is done cover the vat up with cloth that no air may get in The bran should be put into a bag, because if the vat does not spring there arises a putrid smell. The only thing to remedy that is to give the vat a little quick lime, but be careful not to put too much in as for fear of what is called softening the vat; also care must be taken not to overheat but keep only at good heat, because if the vat is overheated the indigo will lose the combination with the ashes and madder and the vat will turn muddy in the color. The remedy for that is 1 lb. of pearl ashes with 4 ounce of madder. If it does not spring and come to a working state in 12 hours, then add a little bran in a bag with half a pound of ashes; if it does not spring with that in 12 hours take out the bran and put in about two quarts of malt with one pound of pearl ashes and four ounces of madder, with a little lime.

A very fast blue with indigo is dyed by saturating powdered indigo for some days, kept at a fermenting heat in a vessel filled with urine and which is better of a little bran and madder. No faster, or more primitive blue on wool is dyed than in this manner, and any person can do it.

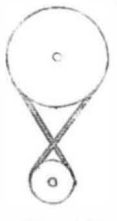
The receipt for an ash vat can only be useful to manufactories. The ash vat is used for dyeing a fast blue on silk, such as a basis for a green colored umbrella to stand exposure to the sun. All our common blues and greens on silk are very fugitive, with the exception of Prussian blue, which we shall treat of at another time.

To Give Plaster of Paris Figures the appearance of Marble.

Grate an ounce of fine white soap into four pounds of water and dissolve it in a glazed earthen vessel; then add one ounce of white wax scraped down and when the whole are incorporated it is fit for use. Having the figure well dried it is dipped into this varnish, or liquid, and then taken out, and in about four minutes it will be perfectly dry, when it should be dipped again. Three dips is generally enough, when the figure must be put away for about one week in a dry place out of the way of dust, and when it is dry, if rubbed gently with a soft muslin rag a brilliant gloss will be produced, but care must be taken not to rub too hard, or the varnish may be abraided. To a greater or less quantity of water the above must be used in a proportional manner.

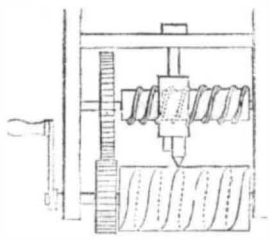
MECHANICAL MOVEMENTS.

The Transfer of Speed.



The transfer of speed in wheels is communicated from a large to a smaller drum or pulley, and the speed is increased in proportion to their diameters, although the difference in this respect is not the same as many would be led to suppose. It is a common opinion even among mechanics that in the gearing of wheels to the power wheels, or main driver, that there is a gain or loss of power according to the size of the geared wheels. But this is a mistake. All the power that is lost in the communication of power from a water wheel or steam engine is in the friction. The truth of this will be easily perceived. by asking the question, "Is there any power lost of a water wheel twenty feet in diameter by the gearing of a cog wheel three feet in diameter to the main shaft for driving a quantity of machinery proportional in resistance to the main power?" Every person will see that there is no loss but by friction and yet we received a letter a short time ago asking what was the loss and gain of power in the gearing of one cog wheel to the outside or inside rim of another cog wheel fixed on the main shaft of a water wheel. If, as some suppose, there is a loss of power in the gearing of a small wheel to a larger one in proportion to their difference of size, then it would be a sad waste of power to gear a cog wheel of three feet in diameter to the main shaft of a water wheel twenty feet in diameter for the purpose of driving machinery. Whatever power there is in the main driver, it is not lost in the main gearing but by friction, and there is no doubt but that friction is increased or lessened according to the different arrangements in gearing, the trueness of connection and relative weight and proportion for sweet motion. The loss or gain of power in main drivers is altogether a different branch from that of minor gearing and belongs to the study of first causes, or fundamental principles of mechanics. A wheel one foot in diameter that lifts one pound every revolution and revolves once every minute will lift 60 lbs. per hour, and a wheel half of its size with the same driving power will lift half a pound every revolution but makes two revolutions per minute, therefore it will make 120 revolutions in an hour and lifting half a pound each time, lifts as many pounds exactly in an hour as the wheel of double its diameter.

Screw Movement.



The above cut represents a method by which spirals are produced by screw movement.—The cutter is attached by a nut to a bed piece above to keep it steady as it is moved along in a slot therein. The toothed wheel on the lower shaft is driven by the handle and by said wheel meshing into the wheel on the screw axle, the cutter is moved traversely and cuts a spiral on the lower shaft as said shaft is revolved. There is a thread in the cutter box for the correct action of the screw.

The Protective Powers of Vaccination.

The Philadelphia Examiner has a report on this subject issuing from the College of Physicians, of Philadelphia. The report is very carefully drawn up, it is founded on a large scale of facts: and the conclusion, fully confirmatory of our previous knowledge, will bear the repetition.

1st. That Vaccinnation is the best preservative of human life, now known against the contagion of small-pox; and althought it has not answered the full expectations of its more sanguine advocates, by protecting the system in all instances against at least a modified form of variola, which in the case of the small-pox itself, nevertheless life is very generally protected by it, and humanity and sound practice imperiously call for its continuance.

That portion of the community who have been once successfully vaccinated, are, in the great majority of cases, fully protected from small-pox, or varioloid.

A second vaccination does not insure the system in every case against an attack of varioloid; neither does second vaccination prevent an impression being made on the system by a subsequent operation.

Upon the recurrence of small pox in a family or neighborhood, it is important that all individuals in regard to whom there is any doubt, or uncertainty as to the fact of their having been successfully vaccinated and should be subjected immediately to the operation—this being the most certain means of preventing the spread of the contagion.

Personal experience has convinced us that the above report is true in every particular.

Great Belgian Iron Foundry.

The foundry of Seraing, the most important in Belgium—was founded by the late John Cockerill, but has since been very greatly extended by its present proprietor. M. Pastor It now occupies a superficial extent of 2,170 yards, has six blast furnaces, five of which are employed in smelting, and the remaining one in preparing the metal for superior castings; the produce of the five is about 73 1-2 tons of pig iron in 24 hours, and the latter 9 tons of fine casting metal in the same period The quantity of metal required to supply the furnaces. in 12 months, is 53,572 tons of iron ore, 34,852 tons of coke, and 14,723 tons of limestone, or other flux, the tilt hammers weigh 4 1-2 tons each; 11 steam engines are employed, of an aggregate power of 500 horses; the principal forge produces 86 tons of wrought iron monthly. The workshop, for the manufacture of locomotive engines, extends over a space of 1,260 square yards, traversed down the centre, by two parallel lines of railway, and the lathes for turning the various delicate parts of a most gigantic description. To form some idea of the extent of this establishment, the reader must bear in mind that there are upwards of 4,200 men employed day and night. In addition to the iron furnaces there are 14 smaller ones, for copper, brass, steel, etc. The produce annually of the rough metal, before manufacture, cannot be much less than $5,000,000.

A Pen-Knife Genius.

The Rochester Democrat, says, we were shown, yesterday, at the Express office of Well's and Co., a great curiosity, that should place the owner at the head of the pen-knife fraternity. It was a wooden chain, fourteen feet long, with a box of balls at each end, the whole of which had been cut and shaped with a pen-knife, from a pine stick. It was left at the express office in March last, enclosed in a box, and directed to Sir John Colborne, of the Isle of Jersey, with direetions to have it presented to the queen. The steamer refused to take it unless the charges were first paid; and as the person who left it at the Rochester office could not be found, it was, a few days ago, returned. The box was opened, and the owners name discovered to be Le pelly, now a resident of Ohio city. Measures have been taken to restore to him his property.

House's Telegraph it is said prints 180 letters in one minute. We think this is barely possible.