For the Scientific American.

To Distinguish Steel from Iron, and to Soften and Color Steel.

Mr. Editor :—I observe an article in one of your city publications treating upon the above points. I am a working man, and have found the following rules and principles of testing the points on hand. I have found that to distinguish between the two metals, it can be done much more correctly by the *sound* and the *touch*. Relative to the sound, there is as much difference comparatively speaking as there is between copper and brass. Secondly, what I mean by touch, simply is to take a fine cut file, hold the article to be tested in your left hand, the file in the right, draw it gently over the steel or iron—if iron, it sounds *flat* and catches *soft*, if steel it sounds *sharp*, and rubs *hard*. Some may tell us case hardened instruments or tools will act the same as the latter, the best way is to test it; the file will slide over the case hardened article, *but the sound* resembles that produced on the iron.

To soften steel in small pieces, take a pot filled with ground lime and the ashes of oak wood, when your steel is blood red thrust it into this composition, cover it over and let it remain until it is perfectly cold, then take it out for use. If it is to be turned or drilled, the centres ought to be punched previous to its being put in the fire. This plan is nearly equivalent to the annealing box.

To color steel, this never can be properly done, as some suggest, by polishing the article and putting it upon a hot bar, the color is irregular and of a darkish hue; but polish it and then have a pot of boiling lead and block tin, of equal parts, plunge the article to be stained in this lead pot, hold it there half a minute, then raise it and with as much dispatch as possible immerse it in cold water.—Try the experiment, and if properly done you will have a blue as clear and beautiful as a Grecian sky.

Yours, &c. BRAMBLE BRAE.

Wheeling, Va., April 8, 1848.

For the Scientific American.

Carburet of Sulphur.

This liquid (which by an error in No. 29 Scientific American, is named sulphate of carbon,) was first made by Lampidus by distilling a mixture of pulverized pyrites and charcoal in an earthen retort. It is made by putting fine charcoal into a porcelain tube that traverses a furnace at a slight angle of inclination. To the higher end of the tube a glass retort containing sulphur is luted and to the lower end is attached an adopter tube which enters into a bottle with two tubulars half full of water and surrounded with ice. From the other aperture of the bottle, a bent tube proceeds into the pneumatic trough. When the porcelain tube is brought into a state of ignition, heat is applied to the sulphur which subliming into the tube combines with the charcoal forming the sulphuret of carbon or the carburet of sulphur. (Sulphates are the combinations with the metals.) Unless the carbon, however, is most perfectly calcined no carburet will be obtained. It has been said that Professor Hieburg of Sweden has used this as a substitute for chloroform; it is, however, a dangerous substance to inhale.

This liquid presents one of the most curious phenomena's in chemistry, for it is the production of two solid bodies and is a fluid which we cannot solidify. It explodes in combination with oxygen by passing an electric spark through it. It dissolves camphor, but does not unite with water and thereby resembles chloroform, and also in its prime equivalents, 15 carbon, 85 sulphur.

To Make Kitchen Vegetables Tender.

To a gallon of peas or beans, either green or dry, add a teaspoonful of saleratus, while cooking, and they will boil tender, much quicker and be of a brighter color.

For the Scientific American.

Painting Top Rollers for Spinning Mules, Frames, Speeders. &c.

Mr. Editor —Proper attention to the clothing of top rollers, is an essential part in the cotton manufacturing. The roller is first painted with white or red lead, then clothed with fine woolen cloth made for the purpose, afterwards the whole is covered over with leather. Regarding the first part, the painting of the roller. Hitherto this has been done generally with a brush, or putting into a small lathe or centre stand. A much simpler and more expeditious method is this: take a piece of roller cloth, tack it light upon a half inch board say 1 foot square, or smaller according to the size of the roller, then take a stout thick brush, paint it over a proper thickness with the red or white lead and roll the roller over it. by having a small piece of wood with a notch in it resting on the centre of the roller. The paint must be spread regular and of a proper thickness, and the result is a saving of paint, the work regular, and more than the double accomplished. The roller when dry will appear rough, consequently the cloth will hold the tighter. B. B.

Diamond Dust.

The demand for diamond dust within a few years has increased very materially, on account of the increased demand for all articles wrought by it, such as cameos, intaglios, &c. Recently a discovery has been made of the peculiar power of diamond dust upon steel; it gives the finest edge to all kinds of cutlery, and threatens to displace the hone of Hungary. It is well known that in cutting a diamond (the hardest substance in nature) the dust is placed on the teeth of the saw—to which it adheres, and thus permits the instrument to make its way through the gem. To this dust, too, is to be attributed solely the power of man to make brilliants from rough diamonds; from the dust is obtained the perfection of the geometrical symmetry which is one of the chief beauties of the mineral, and also that adamantine polish which nothing can injure or effect, save a substance of its own nature. The power of the diamond upon steel is remarkable: it is known to paralyze the magnet in some instances. A diamond cast into a crucible of melted iron converts the latter into steel.

Blasting By Potassium.

To effect this, a tin case must be provided, closed at both ends, except a small hole in the centre of one. Fill this with gun-cotton, or gun-powder, if the latter fasten a piece of pasteboard, open at one end, very shallow, and wide enough to cover the hole in the largest cylinder or base, in this, put a piece of potassium, invert it over the hole in the larger case, and fasten it on. The case thus prepared, with weights attached, is carried down by a diver, and placed in a proper situation, in half an hour, the water will soak through the pasteboard top, come in contact with the potassium, immediately inflame, and cause the explosion of the case.

Such is the plan, but for certainty it has many objections.

Khorassan or Turkish Mortar.

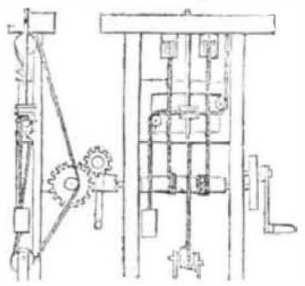
Khorossan is used for the construction of mosques, reservoirs, and other buildings requiring extraordinary solidity. It is composed of one-third bricks, and tiles pounded to the consistency of road scrapings, and two-thirds of finely-sifted lime, with the necessary quantity of rain-water. When employed, the mortar is laid on in layers of from five to six inches in thickness between each range of bricks or stones, the latter being dipped or sprinkled with water, to augment the adhesion. Khorassan still in common use, was employed by the early Byzantines, as is proved by the remnants of their cisterns and churches. It was borrowed from the Arabs, who took it from Persians, and called it Dakik ul Karf, (potter's dust.)

Ladies' Waists.

Women ought to measure from twenty-seven to twenty-nine inches round the waist, but most females do not permit themselves to grow beyond twenty-four; thousands are laced to twenty-two, some to less than twenty inches; and thus by means of wood, whalebone, and steel, the chest is often reduced to one half its proper size.

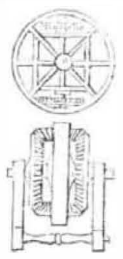
MECHANICAL MOVEMENTS.

Gun Boring.



This is a front and side view of a French machine which was used some years ago for boring rifle gun barrels. Motion being given to the handle or winch, the sliding carriage which moves perpendicularly in the side guides is elevated or lowered by the inclined rope in the left hand figure, at the same time that a rotary motion is given to the perpendicular boring tool by another band passing round the horizontal warve and held tight by means of the weight.

The Dinanometer.



This is a machine for determining the required amount of power to give rotary motion to any given piece of mechanism. It was invented by Mr. J. White of England, more than half a century ago. The upper figure shows a hooped piece carrying two bevels and revolving freely on the middle of the horizontal shaft in the figure below. On the horizontal shaft are seen two bevels which gear into those carried by the hoop piece, the one of these is fast to the horizontal shaft and the other runs loose. Supposing then the hooped piece in the lower figure to be held stationary and motion to be given to either of the side wheels, it will be imparted through the horizontal bevels to the opposite wheel; but on the other hand, if the hooped part is not held stationary, it will rerolve on the shaft along with the wheel which is put in motion and the amount of power required to hold the hooped piece stationary will be the same as the amount transmitted from the first wheel. Thus a band attached to the periphery of the hoop will indicate the power by the amount of weight required to keep it stationary.

Cure for Hydrophobia.

Desirous to do all in our power to mitigate the fearful effects of this almost supernatural disorder, we insert every prescription that we find, upon the principle that "in the multitude of counsellors there is (a chance of) safety." The following cure of hydrophobia is recorded as having occurred in the native hospital at Calcutta; From a patient under the aggravated symptoms of that disease 40 ounces of blood were taken, which produced immediate relief. The rabid symptoms re-appeared in about two hours, blood was again let, till he fainted, which happened after eight ounces were taken. After the second bleeding, the disorder did not return. But considerable quantities of calomel and opium were administered; and he was discharged in a fortnight.

[We believe that the hydropathic system is the best to treat hydrophobia with. Who can explain or give a reason for the dread a person affected with hydrophobia has to water? No one. But may not this be a key to the cure.

Curious Experiments in Managing Pigs.

The following experiment has been made by a gentleman of Norfolk:

Six pigs of nearly equal weight, were put to keeping at the same time, and treated the same, as to food and litter for seven weeks. Three of them were then left to shift for themselves, as to cleanliness: the other three were kept as clean as possible, by a man employed for the purpose, with a curry comb and brush The last consumed in seven weeks, fewer peas by five bushels than the other three, yet weighed more when killed, by two stone and four pounds upon an average.

Concrete.

This is the name of a mass of sand and small stones cemented together by lime, or some other cement. It would be well if the foundations of all buildings, when there is not solid rock, rested upon a strata of cement concrete. Seventy parts of fine stones, twenty parts of sharp river sand and ten parts of good lime mixed with water and grouted in. A good plan is to mix the lime dry with the other material and then throw water over them to make a perfect mixture by turning over. There is about one-fifth contraction of the concrete, in reference to the bulk of its ingredients before mixture. This would be a fine substrata for plank roads as well as block pavement.

To Transfer Engravings to White Paper.

Place the engravings for a few seconds over iodine vapor. Dip a slip of white paper in a weak solution of starch, and when dry, in a weak solution of oil of vitrol. When dry, lay the slip upon the engraving, and place them for a few minutes under a press. The engraving will be thus reproduced in all its delicacy and finish. The iodine has the property of fixing on the black parts or ink of the engraving, and not on the white. This important discovery is yet in its infancy.—*Builder*.

Cullodion.

This new preparation, recently invented by Mr. S. L. Bigelow, of Boston, and noticed in a former number, for the healing of wounds, consists of a solution of gun-cotton in ether. The cotton is entirely dissolved, and the preparation seen in a phial is clear as water. When applied to a cut or wound, it hardens into a flesh-colored water-proof coating. As the coating dries, it contracts, and thus draws the lips of the wound close together, protecting it from irritation, and leaving the least possible scar.

Ether and Chloroform.

Dr. Simpson, of Scotland, has computed that of 300 surgical operations performed with ether and chloroform, fewer proved fatal than is usual in the same cases without these agents Of 1088 cases of amputation in the thigh, with anæsthetic agents, 44 in 100 died; out of 135 cases, with ether and chloroform 33 only died, or 24 in 100.