Manufacture of Good Crucibles.

This is a branch of the potter's art requiring great care to insure success, and has generally been considered a very uncertain process. A good crucible is required to stand the greatest heats and to withstand the corrosive effects of any substance ignited in them, also to to stand sudden changes of the temperature. Good crucibles must be composed of a material sufficiently solid in its texture, to prevent the passage of the fluid metal through its pores. The composition producing pots of the best quality, is formed by pure fire clay, mixed with finely ground cement of old crucibles, to which is added a portion of black lead or plumbago. The clay is prepared in the same manner as observed in pottery generally; the vessels after being worked to the proper conical shape, are slowly dried and then baked in a kiln. The composition used in the Royal Foundry of Berlin, is formed of 8 parts in bulk, of Stourbridge clay and cement, 5 of coke, and 4 of graphite or plumbago. Crucibles manufactured from this mixture are capable of withstanding the greatest possible heat, in which wrought iron melts, being equal to from 150 to 155° Wedgewood: they also bear sudden cooling without cracking. In the Berlin Foundry they have been employed for 23 consecutive meltings of 76 lbs. of iron each, which perhaps is the most complete and trying test that could be adopted.

Another composition is as follows;—8 lbs. Stourbridge clay: 4 lbs. burned clay cement; 2 lbs. coke powder, and 2 lbs. pipe clay; the whole being compressed in moulds whilst in a pasty state.

Mr. Anstey's patent process for the manufacture of crucibles, is as follows:—Two parts of finely ground raw Stourbridge clay, and one part of the hardest gas coke, previously pulverised, and sifted through a sieve of 1-8th inch mesh, are mixed well together with water. This mixture is moulded on a revolving wooden block, somewhat similar to the process pursued in pot throwing, a guage being used to regulate the thickness of the pot, and a cap of linen placed upon the core previous to the application of the clay, in order to prevent its adhering when removed. The pot is then dried in a gentle heat and is not thoroughly completed until required for use. It is then warmed before a fire, and laid in the furnace, with the mouth downwards, the heat of the fire having been previously lowered by the application of fresh coke. The furnace is then filled with coke sufficiently high to cover the crucible, when it is gradually brought up to a red heat. When this is the case, it is reversed, and fixed in its proper position in the furnace, without being allowed to cool. The charge of metal is then put into the crucible, and three or four large pieces of coke are placed across the mouth of the pot, the tile or lid is then put down, and the draught of the furnace adjusted to heat the metal quickly.

Brilliant Whitewash.

Many have heard of the brilliant stucco whitewash on the east end of the President's house at Washington. The following is a receipt, for making it, as gleaned from the National Intelligencer, with some additional improvements learned by experiment:

Take a half bushel of nice unslacked lime, slake it with boiling water and cover it during the process to keep in the steam. Strain the liquid through a fine sieve or strainer, and add to it a peck of clean salt, previously well dissolved in warm water: three pounds ground rice, boiled to thin paste, and stirred in boiling hot; half a pound of powdered Spanish whiting, and a pound of clean glue, which has been previously dissolved by first soaking it well, and then hanging it over a close fire in a small kettle within a large one filled with water. Add five gallons of hot water to the whole mixture; stir it well and let it stand a few days covered from the dirt. It should be put on right hot; for this purpose, it can be kept in a kettle on a portable furnace. It is said that about one pint of this mixture will cover a square yard upon the outside of a house if properly applied.

Brushes more or less small may be used according to the neatness of the job required.—It answers as well as oil paint for wood, brick, or stone, and is cheaper. It retains its brilliancy for many years. There is nothing of the kind, that will compare with it, either for inside or outside walls.

Spanish-brown stirred in will make red or pink more or less deep according to the quantity. A delicate tinge of this is very pretty for inside walls. Finely pulverised common clay, well mixed with Spanish-brown before it is stired into the mixture, makes a lilac color, very suitable for the outside of the buildings. Lamp-black and Spanish-brown mixed together make a reddish stone color. Yellow ochre stirred in makes a yellow wash; but chrome goes farther, and makes a color generally esteemed prettier. In all these cases, the darkness of the shade of course is determined by the quantity of coloring used.

When walls have been badly smoked, and you wish to have them a clean white, it will do to squeeze indigo plentifully through a bag into the water you use, before it is stirred in the whole mixture.

If a larger quantity than five gallons is wanted the same proportions should be observed.

[The above receipt we have noticed before, (last year) but as the season is approaching when walls, fences, &c. will look and feel all the better of a new coat, we must recommend some of its features to the attention of housewives and husbands. But first we must say, that those who use hot lime will find that it soon destroys brushes. The rice paste is the best that can be used. Don't use much glue, as it is apt to make the lime scale off. No person need expect any lime wash to be as good as oil paint—that is all nonsense. There are but few coloring matters that look well mixed with lime. Chrome certainly does not. It loses its yellow color and becomes a dirty orange. A litter of the sulphate of iron, mixed with lime, makes a very good cream color—the iron scales around a blacksmith's forge answer the same purpose. We prefer to use the lime without any coloring matter in it except a little indigo. Those who use whiting for the ceilings of papered rooms should mix a little indigo with it.

Leavened Bread.

The perfection of fermented bread consists first in its exhibition when the loaf is cut through, a pile of air cells gradually increasing in size as they approach the top of the loaf. Secondly, the middle of the loaf should be as dry as the part next the crust and not crumble when cut.

Bread undergoes a great change soon after it is baked. No person can eat as much old as new bread, and this shows that it absorbs nutriment from the atmosphere? What is this nutriment? Nitrogen undoubtedly. Carbonic acid is driven off in the baking and this is what makes the numerous cells in the bread. It is the same with charcoal. Well, a cubic inch of charcoal, with its numerous minute cells, possesses, strange as it may seem, at the lowest computation, a surface of one hundred square feet. Charcoal has the property of absorbing the gases to a wonderful degree, and bread has the same property. But it is just as ready to absorb a hurtful as a wholesome gas. For this reason it should be set in a dry and airy situation, not in a damp cellar or close pantry. Warm bread is not esteemed so wholesome as bread that has been baked 24 hours, and although people can eat more at a meal of the former, yet the next meal does not find the appetite in so healthy a tone as after taking the previous meal of old bread.

Durability of Cedar.

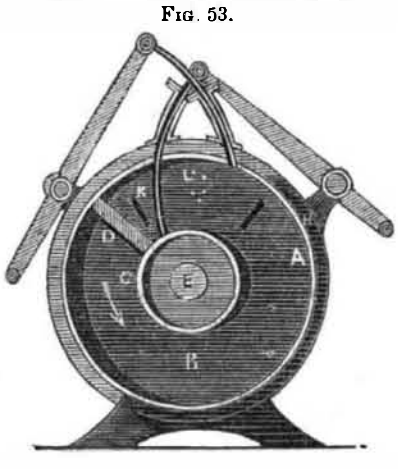
At the head of one of the graves in the burial ground "Old St. Mary's," Md, there stands a cedar slab which, as the inscription indicates, was placed there in the year 1718. Notwithstanding it has been exposed to the weather for so long a period, it is still perfectly sound; and if unmolested by desecrating hands, it will doubtless be standing when every man woman and child that moves upon the earth, shall have gone down to "darkness and the worm."

History of the Rotary Engine.

Prepared expressly for the Scientific American.

STEENSTRUP'S ROTARY ENGINE.

FIG. 53.



This is a vertical section of Paul Steenstrup's engine, invented in 1828, and it is a strange looking affair, yet not so curious or impracticable as to induce us to believe that only one man could conceive such an idea.—In 1847 a rotary engine nearly the same in all respects, was exhibited in New York. It is true that it was universally acknowledged to be a poor one, but still it showed that there are "many men of not many minds."

A, is a section of a cylinder accurately turned and bolted at each end to a plate B, which is ground perfectly flat. C, is a smaller cylinder, to which is attached a rectangular piston D. E, is the shaft secured by screws to the small cylinders and turning in stuffing boxes. F, is a slide moving in circular grooves cut in each end piece of the cylinder and in a steam tight box. H, is a lever connected by gearing to the shaft of the engine and serving to draw up the slide into the box, in order to allow the piston to pass. The slides are portions of a circle, of which the axis of the lever H, is the centre. K, is the steam valve and L, the exhaust valve.

OPERATION.—The slide F, being down, and resting on the interior cylinder, and the piston in the position shown in the drawing, the steam is admitted by the valve K, which impels the piston in the direction of the arrow. When the piston comes near to the exhaust opening L, the steam is cut off and the piston is carried past the passage by a fly wheel (for it needs one too) on the shaft of the engine—the slide being previously raised into the box, to allow the piston to pass.—When the piston has passed, the steam is readmitted and the same operation continued.—With an engine that does not need to be reversed, only one slide and one steam valve is necessary, but when it is wanted to be reversed, the two slides are required.

Diamond and Coke.

In 1847 M. Jacquelain of Paris, succeeded in converting diamond into a substance possessing the appearance, physical character, and electrical properties of coke by the following process:—Having attached a piece of hard gas retort carbon to the positive wire of Bunsen's battery of 100 elements, he placed on it a small piece of diamond. He then armed the negative wire with a cone of the same carbon, and, by dexterous manipulation, enveloped the diamond with electric flame. After a short interval, the diamond underwent a sort of ebullition, became disintegrated, softened, and was actually coke.

Professor Farraday in commenting on the above before the Royal Society alluded to the case of sulphur, which becomes brittle when suddenly cooled from its first state of fusion, but is soft and pliable when similarly cooled from its second state of fusion. He also showed by experiment that diamond could be burned into carbonic acid gas by means of a current of oxygen gas directed on it when highly heated, but neither this heat nor any short of that of the voltaic battery, except that of the solar lens, was sufficient to convert diamond into coke. The voltaic arc was the most beautiful and powerful furnace. Crystal rock might be fused by a current of oxygen sent through an ether flame. This powerful heat was inferior in intensity to that of the battery.

When a diamond is converted into coke it loses .689 of its specific gravity, which is 3.368—and also its insulating power.

Simple Remedy for Burns.

An esteemed lady friend sends us the following "remedy for the most painful burns," which, "if applied immediately, affords almost instant relief." She says: It consists of equal parts of linseed oil and lime mixed together. It must be well shaken before using and poured over an even piece of raw cotton and applied to the sore. It may be renewed two or three times a day. This remedy is valuable to families, and so simple that it is within the reach of every one. She has seen almost immediate relief derived from the application of this mixture to the most painful and serious burns, which, without it, might possibly have become wide spread, tedious and expensive wounds

We copy the above from the Baltimore Sun to endorse its truth. The lime water and the oil makes a beautiful white salve, personally tried some years ago, with satisfaction.

Universal Cement.

Curdle skimmed milk, then collect the curd press out the whey, break the curd into small pieces, dry by the heat of a water bath and reduce it to a fine powder. To ten ounces of this powder add one ounce of finely powdered quicklime and two scruples of camphor.—Mix them well together, and keep the mixture in closely stoppered bottles. When it is wanted to be used, a portion of this powder is to be mixed with a little water, so as to form a paste, which is to be applied quickly. This cement may be used for almost every thing in the shape of fine work.

Economical Hair Wash.

Take one ounce of borax, half an ounce of camphor; powder these ingredients fine, and dissolve them in one quart of boiling water; when cool, the solution will be ready for use—damp the hair frequently. This wash not only effectually cleanses and beautifies, but strengthens the hair, preserves the color, and prevents early baldness. This, we conceive, cannot be too generally made known.

Tin foil applied between the joints of fine brass work, first wetted with a strong solution of ammoniac makes an excellent joint, care being taken not to use too much heat.