



A DEAD BLACK PAINT.

PROBABLY many of our readers, especially those who are the possessors of optical instruments, have, at some time or other, been in need of a "dead black" paint or varnish for brass work, such as tubes diaphragms, etc. We have often been in the same boat, and all the formulae and recipes given in the books were unsatisfactory because of their vagueness. The following can be relied upon to give a first-rate dead black, and it is easily made: Take two grains of lampblack, put it into any smooth, shallow dish, such as a saucer or small butter plate, add a little gold size, and thoroughly mix the two together. Just enough gold size should be used to hold the lampblack together—about three drops of such size as may be had by dipping the point of a lead pencil about half an inch into the gold size will be found right for the above quantity of lampblack; it should be added a drop at a time, however. After the lampblack and size are thoroughly mixed and worked, add 24 drops of turpentine, and again mix and work.

WARPING OF WOOD.

IT is said that the wood on the north side of a tree will not warp as much as that from the south side and that if trees are sawn in planes that run east and west, as the trees stood, it will warp less than if cut in the opposite direction. However this may be, it is certain that the tendency to warp when sawed into boards is much greater in green than in dry wood, and that the convex side of the curve is always toward the heart. This warping, due to unequal shrinkage, and to the more open texture of the external portion of the tree, is not found to occur in the middle plank or board of the log, excepting as it may in slight degree reduce the breadth. This quality of not warping, which is in many cases absolutely indispensable for certain uses, as for example, in the sounding boards of pianos, is secured in the case of spruce timber by first quartering the logs, and then sawing them with the angle downward. It is then sawed into boards very nearly at right angles with the line of annual growth, and a small triangular strip must be taken off to make the board square edged, but qualities of stability and strength are secured that could not otherwise be had.

HOW MIRRORS ARE MADE.

ONE of the factories in Chicago employs 150 men and boys, and its spacious four floors present an interesting series of sights to visitors whose nerves are steel and tympani proof against splitting. On the first floor he will see huge stacks and piles of glass in assorted sizes ranging from sixteen feet by seven feet square down to the smallest ovals for mirrors. These are all polished, some being run over by huge felt-covered wheels kept powdered with rouge, and the larger sheets scrubbed by sweating toilers with hand blocks covered with felt like the printer's proof planer in rouge. After the glass is thoroughly polished it is taken up to the next floor, where it is laid on tables and cut into the sizes ordered. It then passes into the hands of the bevellers, who, with sand and water and large grindstones, artistically finish the edges of the glass. It takes a trip upward again, to another floor, and is once more put through a polishing process, to remove any scratches or blemishes that may be on the glass. After every spot or scratch, no matter how minute, has been removed, careful hands convey the now beautiful and sparkling glass to the room where it goes through the final process, the silvering. Huge jables of cast iron or stone made like billiard tables, with raised edges, are used in the silvering room. These tables are of great strength and solidity, and all round the edge is a drain, for the superfluous mercury is poured over the tables in quantities sufficient to float the glass, which, after being inflated, is gently and carefully pushed across the table containing the mercury. Great care must be used to prevent blemishes, the least speck of dust being ruinous to the mirror. Mercury, like molten lead, is always covered with a dirty-looking scum which cannot be removed by skimming. The least bit of this scum would spoil the mirror, so the difficulty is obviated by showing the scum along the edge of the glass. After successfully floating the glass on the mercury, a woolen cloth is spread over the whole surface and square iron weights are applied

until the whole presents a compact mass of iron, two or three pounds to the square inch. After this pressure has been confined ten or twelve hours the weights are removed and the glass placed upon another table with slightly inclined top. The inclination is gradually increased until the unamalgamated quicksilver is drained away and only the perfectly amalgamated remains, coating the glass and perfectly adherent. This ends the process, and the erstwhile rough piece of glass emerges from the silvering room a gorgeous mirror.

TERRA COTTA AS A BUILDING MATERIAL.

THE recent introduction into Canada of terra cotta for building purposes, suggests a few remarks on the manner of its use, and its value for the purposes it is designed to serve. As a building material terra cotta is chiefly intended for decorative and protective purposes. It takes the place of expensive stone carving for exterior and interior decoration. As a fire-proof material, it ranks among the very best. Blocks or tiles of terra cotta may be used to advantage for roofs and walls of buildings including a constructive frame-work of columns, posts, brackets, beams, girders, rafters, etc., on which the support of the building depends. Mr. S. E. Lording writes on this subject in *Building*, says: "All the iron-work is incased in porous terra-cotta, tile, or brick-work. Slate, tile, and furring strips are nailed or screwed to this porous tile sheathing."

"The hollow or porous tiles or bricks forming roof and wall are faced with vitreous tile, slate, or other water and weather proof coatings, or with a single thickness of brick or tile. The interior faces of these porous terra-cotta tiles may be plain or paneled, and glazed, or finished with plaster, paint, etc. Any desired wall finish can be applied to this ground. The porous tiles forming the sheathing in roof and floor or wall are made spongy, or like a pumice-stone body, by thoroughly and evenly mixing equal or various proportions of sawdust or other combustible or vegetable matter with pure clay. When carefully burned, to avoid sudden shrinkage or melting together of the particles of clay, the spaces left by the burning of the combustible materials form an open, spongy body that increases the value of the burned clay-work as a non-conductor, decreases its weight and its liability to crack when heated and cooled suddenly, and will allow screws or nails to be driven into this porous clay-work and securely fasten to this sheathing or ground-work the tiles, slates, interior furnishings, flooring, etc., required in finishing and decorating the exterior and interior walls and floors. The use of iron or steel secures a light, strong construction, and when incased in porous terra-cotta or concrete, the combination forms a complete wall protection against any fire that would destroy this supporting frame-work."

"Above this fire-proof web or wall, the furring strips or scantlings of any required size may be placed, leaving the required space for water, gas, and heating pipes, etc., and supporting the floor or the flooring or wall finish." This principle of construction applies to all stories. We started with the roof merely to show its special value there, the other floors that may be added only requiring the additional strengthening of the supporting columns as each story is added.

"Blocks or tiles, if of porous terra-cotta, also form the interior ground-work to receive both exterior and interior finish, making altogether a light, strong, fire-proof building. These walls, if supported in each story by this constructive frame, can be made much lighter. The whole structure will be as safe as a fire-proof construction; as, if heavier walls were built from the foundation extending through several stories, and heavy enough to support themselves, while they protect the constructive steel or iron framework which supports the floors and roofs of the building. With such a construction brick or stone work should not be used above the ground or foundations to support floors and roofs."

"The highest uses of clay and stone are to protect and to decorate, and when applied to these purposes, then massive or heavy walls of stone or brick will not or need not be built. Light walls of porous or hollow material, insulating and protecting a metallic or wood frame-work, will be used. These light walls, as stated above, may be as useful and still lighter, if they also rest upon and are supported by this iron or steel frame-work."

In the construction of ordinary dwelling houses for outside walls and inside finish it costs no more than for lumber but giving the additional advantages of a warm dry vermin proof building, impervious to sound, cool in summer, and at but small additional cost can be made absolutely safe from fire. The porous terra-cotta costs less for fire-proofing purposes than common brick, and architects' plans need but little if any changing either in details of construction or cost for application of this ware. Its cheapness and cost of application should warrant its use in hotels, places of amusement, public buildings warehouses and first-class dwellings. Its manufacture was first commenced in Canada by the Rathbun Company at Deseronto, Ont. Other companies have also been formed for manufacturing this line of material, and no doubt we shall see it coming into general use resulting in lower insurance rates and greater comfort and security to our people in construction methods in the direction indicated above.

It is estimated that over 300,000 worth of granite was shipped from New Brunswick to Ontario purchasers last year.

An incendiary attempted to set fire to Eglin's fish and deer factory, in Montreal, recently, but fortunately his plans miscarried.

There is reason for the belief that in the near future, glass and paper will take the place of many building materials of the present day.

Messrs. Snider & Stebbins, of Plattsville, Ont., have placed a new engine in their brick and tile yard in anticipation of a large trade next season.

From the village of Rockwood, Ont., large quantities of building stone were shipped to Toronto, Brantford, Stratford, Berlin, and other places.

A granite tile 800 years old, taken from the tomb of William the Conqueror at Caen, Normandy, was recently on exhibition in a show window at Detroit.

It is reported that there has been discovered near Tilsonburg an immense bed of marble, side by side with the finest sandstone for building or paving purposes.

Mr. E. Buchanan, of the East Selkirk, Man., stone quarries, reports a poor demand during last season. He burned 25,000 bushels of lime which sold at 15 to 20 cents per bushel.

The Canadian Granite Company, of Ottawa, are preparing a table designed by Mr. Louis Faizer, and executed in gray granite, which is to be erected over the graves of Osagood and Rogers, two sharpshooters who fell in the Northwest rebellion.

There is a large supply of building stone, pronounced by architects to be of good quality, in the vicinity of Selkirk, Man. Specimens of it may be seen in the monument on the market square, in the post office, Winnipeg, and other important buildings.

Mr. B. V. Stahford, of Amprion, lately finished a handsome altar and credence table for the Anglican church in Torbolton. They are built of walnut and red oak. He has also manufactured a set of three chairs in walnut and fine hair plush for the pulpit of St. Andrew's church, Amprion.

The manufactory of the Asphalt Pavine Co., at Ottawa, was totally destroyed by fire on the morning of the 1st. of December last. The contents of the building were also burned. The company gave employment to fifty hands. The loss amounts to about \$10,000; with insurance of only \$4,500.

Persons who may not know the nature and color of black birch after dressing and polishing, may be interested in knowing that the grain of the wood is very fine, the color mottled and slightly darker than satin wood. Black birch makes beautiful furniture, and the only complaint made against it for house trimmings is the care and extra time required in nailing the boards, to prevent splitting.

A NEW BUILDING MATERIAL.—A new building material called stone brick, harder than the hardest clay brick, is made from granite mortar, but a scientifically made and perfect mortar; in fact, a hydraulic cement and the grinding together of lime and sand in a dry state—including also some chromia, which is usually present in sand—and the subsequent heating by steam, give the mixture the properties of the burned hydraulic cements at present in use.

The Montreal branch of the International Terra Cotta Company, is now in active operation. The company manufactures porous earthenware, terra cotta lumber, brickwork, cellular pottery, etc., and their goods bid to enter largely into the building of the future. They show samples of blocks for exterior walls, covered with a perfect water proofing which closes the pores of the material, and prepares it for receiving coatings of paint in any ornamental style to suit. These blocks are as smooth as the pressed brick that go into the construction of buildings, and when laid in walls have the appearance of dimension stone.

Mr. John Radigan, of Hamilton, Ont., has lately patented and commenced to manufacture a circular corner metallic lath, a few particulars of which may prove interesting to architects and builders. The purpose of this invention is to provide a reliable ground for plastering on, in forming round corners or stucco partitions, and also in forming circular plaster columns. It is claimed that this metallic lath having no spring or shrinkage, will prevent cracking or breaking of the plaster. This metallic lath are made the same depth and thickness as the ordinary wood laths, so as to break joint with them, and are made curved inward on the outer edges to form an effective key to hold the plaster. Rounded corners of any required radius can be made. Each lath is formed of strong sheet iron rigidly curved, and is held on by nails at each end driven into the stud, and can be used to form both corner and angle stud corners. In curves of six inch radius, the corner or angle stud can be dispensed with, and the ordinary angle head is not required. Seven of these circular metallic laths form a foot in height on the partition, leaving the ordinary key between them.

Some years ago, says a contemporary, the following whitewash was used on the east end of the White House, and is as good to-day as when first applied: Take one half-bushel of rice unshucked lime; slack it with boiling water, 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 sparrow peas previously dissolved in warm water, three pounds of ground rice boiled to a thin paste, one-half pound of powdered Spanish whiting, and one pound of clean glue which has been previously dissolved by soaking it well, and then hang it over a slow fire in a small kettle within a larger one filled with water. Add five gallons of hot water to the mixture, stir it well, and let it stand for a few days covered from dust. It should be put on hot, and for this purpose it can be kept in a kettle on a portable furnace. It is said that about a pint of this mixture will cover a square yard on the outside of a house if properly applied. Fine or coarse brushes 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. Buildings or fences covered with it will take a much longer time to burn than if they were painted with oil paint. Coloring matter may be put with it and made of any shade desired. Spanish brown will make a reddish pink, when stirred in, more or less deep according to the quantity. A delicate tinge of clay is very pretty for inside walls. Finely pulverized common oil well mixed with Spanish brown makes a reddish stone color; yellow ochre stirred in makes yellow wash, but chrome goes further and makes a color generally esteemed prettier. It is difficult to make rules, because tastes differ. It would be best to try experiments on a shingle and let it dry. Green must not be mixed with lime, for it destroys the color, and the color has an effect on the whitewash which makes it crack and peel.

Mr. John Page, Chief Engineer of Canals, will arbitrate upon the claims of Mr. A. P. Macdonald for extras in connection with his contract on the Troy Canal.