

CEMENTS.—(Concluded.)

CEMENTS FROM CASEINE.

For glass, porcelain, stone and wood, the very best cement is made of a suitable quantity of old cheese rubbed fine and mixed with water to a thick magma, and a fourth part of pulverized lime added.

A still stronger cement for the same purpose is made by slaking 1 pound of quicklime in water, and mixing with $\frac{3}{4}$ pound pulverized lime or sandstone and 1 pound pulverized cheese. Before using, it is well to moisten the fractures or edges with warm water.

A so-called caseine waterglass is made as follows:—The caseine of skimmed milk is separated from it by the addition of acetic acid, filtered, and the acid washed out with water. The pure caseine thus obtained is mixed with six times its volume of concentrated waterglass. This cement is thoroughly commendable, and well repays the trouble taken to make it.

An excellent cement for artificial meerschaum, and one that may be used to give consistency to silk goods or to coat artificial flowers and court plaster, to give more adhesiveness and firmness, is made by rubbing two to four parts of the above caseine with cold borax solution till a thick liquid is obtained that becomes clear on standing. This also renders goods waterproof.

WATERGLASS CEMENTS.

For glass, earthenware, porcelain, and all kinds of stoneware, these cements are excellent. A cement for glass and marble is prepared by rubbing together one part of fine pulverized glass and two parts of pulverized fluorspar, and then adding enough waterglass solution to give it the consistency necessary in a cement.

Waterglass mixed with hydraulic cement to a thick dough makes a good cement for the edges and joints of stone and marble slabs. It is well to mix but little at a time, as it hardens very quickly.

LIME, GYPSUM, CLAY AND CEMENT, MIXED WITH WATER, OIL OR BLOOD.

For cementing stone and for filling crevices in buildings, before they are painted, the masons use a cement made of fresh blood, slaked lime, brick dust, broken up coal ashes, hammerslag and sand in all proportions. This excellent cement hardens quickly, and offers great resistance to the action of the weather.

A lime cement for connecting water pipes, bathing tubs, etc.; a mixture of two-thirds fine brick dust, two-thirds unslaked lime, and two-thirds hammerslag, is made and stirred up with lye or hot oil to a stiff dough.

Another cement, intended to render Hessian clay retorts impenetrable, is obtained by rubbing freshly slaked lime into a concentrated solution of borax. The solution is applied with a stiff brush and allowed to dry, after which it is heated until the glazing begins to fuse.

Clay mixed with water and fresh warm blood, containing some unslaked lime, is used in Germany to close joints in stoves. The cement is applied while the stove is hot. Wood ashes, fire clay and salt mixed with water is used for the same purpose. Fat and burnt clay, in equal proportions, moulded with water into a dough, is also used.

Plaster of Paris mixed with water and a cold solution of alum is an excellent cement for stoneware. It sets slowly, but becomes as hard as stone.

IRON CEMENTS.

Their essential constituents are iron filings or borings. By the addition of some common salt or sal-ammoniac they are readily oxidized, and the cement being thereby increased in volume completely fills the crevices where it is put. An excellent luting or cement for the joints and crevices in iron surfaces, and for rendering tight cast-iron steam and water pipes and water tank is made of filings of cast iron. The filings are sifted to obtain those of the size of a grain of rice, and then rubbed with horse urine and one-half part salt ammoniac,

well worked together, and an equal quantity of flowers of sulphur added. The mass is hammered until its gets warm, and then cold, and, finally, it begins to be brittle. In this condition it is put in the joints, and soon hardens. The surfaces where it is applied must be free from rust. Greasy and oily substances are most readily removed by rubbing with cotton dipped in benzine. The cement keeps best under water.

Another good iron cement is made by stirring 5 parts clay, 1 part salt, and 15 parts iron filings together with vinegar to a magma. It will stand heat, and is used for bellows and air pipes.

OIL CEMENTS.

An excellent oil cement for porcelain and for luting of retorts, flasks and porcelain evaporating dishes is obtained when ordinary brick dust is powdered, sifted and mixed with an equal quantity of red lead, and then rubbed, under great pressure, into old boiled linseed oil to a thick paste, which is mixed with coarse sand to the stiffness of cement. When a dish is to be covered with it, paste is applied before the sand is put in, and the sand then strewn upon it. The dish is afterward exposed to a steady heat for a long time.

For larger vessels take 6 parts litharge, 4 parts fresh-burnt pulverized lime and 2 parts white bole, and mix with cold linseed oil.

To fasten metallic letters to a smooth surface a cement is made as follows:—30 parts copal varnish, 10 parts linseed oil varnish, 6 parts crude oil of turpentine, 10 parts glue dissolved in a little warm water, and 20 parts pulverulent slaked lime. It is very pliant and soon hardens.

To unite copper and sandstone, take $3\frac{1}{2}$ parts white lead, 3 parts litharge, 3 parts bole, 2 parts broken glass, and rub up with two parts linseed oil varnish.

As a polish for gravestones, basins, etc., a paint is made of 9 parts of finely sifted and burnt brick clay and 1 part litharge, mixed with a sufficient quantity of linseed oil.

For connecting cast-iron water pipes, 12 parts Roman cement, 4 parts white lead, 1 part litharge, and $\frac{1}{2}$ part colophonium are pulverized and mixed; from $2\frac{1}{2}$ to 3 pounds of it is triturated with old linseed oil, in which is boiled 2 ounces of colophonium.

Another for the same purpose is made of equal parts of burnt lime, Roman cement, potters' clay and clay, separately well dried, finely ground, sifted, well mixed and triturated with linseed oil. Common lead lute for stopping openings in apparatus is best made from litharge and red lead mixed with old boiled oil. In oil cases the surfaces must be clean. They stand well under water.

As lead lutings are somewhat expensive, the following is recommended:—Take 2 parts red lead, 5 parts white lead, and 5 parts of the finest clay, and mix with boiled linseed oil.

A good oil cement for wood, especially for antique carvings, is made of 1 part pulverized slaked lime and 2 parts rye flour, mixed with linseed oil varnish. It takes any desired colour and polish.

To make water holders tight we may use pulverized slaked lime and cod-liver oil.

A cement to make chemical apparatus tight can be prepared from oil cake or pressed almond cake rubbed with water.

MISCELLANEOUS CEMENTS, ETC.

Furniture polish:—Moisten 120 parts beeswax with oil of turpentine, and add 7-5 parts finely pulverized resin, and enough aniline red to give the desired mahogany colour.

Oil cement:—100 parts red lead, 250 parts white lead, 200 parts pipe clay; mixed with boiled oil.

Water cement:—100 parts slaked lime, 190 parts brick dust, 160 parts sand, 50 parts blacksmiths' dross, 50 parts powdered lime; mix with water.

Another:—600 parts iron filings, 100 parts ignited sand, 100 parts powdered slaked lime; mix with water.

Iron and blood cement:—100 parts pulverized lime, triturated with bullock's blood, 290 parts cement, and from 5 to 10 parts iron filings.—*Journal of Applied Chemistry*.

It has been noticed in Kansas that the buffalo grass of the prairies gradually disappears and is replaced by other grasses, as the country becomes the home of civilized men.