

CEMENT FOR CAOUTCHOUC.—It is recommended to macerate pulverized shellac in ten-fold its weight of a strong aqueous solution of ammonia, so-called spirits of hartshorn, whereby a transparent, gelatinous mass arises, which becomes fluid if the bottle containing the gelatine is immersed in hot water. It also becomes fluid after standing from three to four weeks. When to be applied, both surfaces to be united are moistened with the mass and pressed together. As soon as the ammonia is evaporated, the caoutchouc becomes as hard as the homogenous caoutchouc mass itself. The cement is also suitable for uniting caoutchouc to glass, metal, etc., in fact, upon all smooth surfaces.

SOFT GOLD SOLDER.—Melt equal parts of 14-karat gold and silver solder, and hammer it into a thin sheet upon the anvil. This solder will satisfy all the demands of a watch repairer. It is advisable to use silver solder for low grade, say 6 or 8-karat gold goods, which consists of 2 parts fine silver and 1 brass, with the addition of a gram of tin. Another nice soft solder for 8 and 14-karat gold, consists of 1.5 parts fine silver, 0.5 fine copper, 1.16 14-karat gold and 0.4 zinc: the first three metals are well melted and mixed together, and when well in a fluid state, the zinc is added, the whole left for a few moments in fusion, until it melts, not volatilizes, and then cast.

TO SILVER GLASS.—Dissolve 3 grains of ammoniacal nitrate of silver in 1 oz. distilled water, which solution must be rendered somewhat clouded by sufficient nitrate of silver, and then filtered. Immediately before use, mix 1 oz. of this solution with 2½ grains Rochelle salt. The glass to be silvered having been cleaned to its utmost, is placed into a suitable vessel, the bottom of which is provided with a few cones, thus raising the glass about one inch above the bottom, and the fluid is poured over it. The vessel is placed on the northern part of the house, or in a place with deadened light, and the silver precipitated will be sufficiently thick in two hours. It taken out, washed and dried; if the glass with the silver pellicle is to be used as reflector or speculum, the coating must be protected by varnish.

CRYSTALS.—Dr. Botcher publishes a very simple method of coating paper, wood, or glass with crystals: Mix a very concentrated salt solution, in cold, with dextrine, and apply the fluid with a broad, soft brush upon the surface to be decorated, spreading it in a layer as thin as possible. After drying, the surface will show a very handsome, pearl-lustrous coating, which on account of the dextrine, very tenaciously adheres to the surface. It may be made adhesive to glass by coating it with an alcoholic solution. Salts especially suitable for the purpose are specified Dr. Botcher to be sulphate of magnesia, acetate of soda, and sulphurate of zinc. If paper is to be decorated in the same manner, it must be sized. Unsized paper absorbs the fluid, and prevents a regular formation upon its surface. Visiting cards of this style, by the name of alabaster cards have for some time been in high favor. Colored glass provided with such a coating, is very handsome if light can penetrate it.

CLEANING IVORY ORNAMENTS.—Ivory ornaments are quickly cleaned by brushing them with a new, not very sharp tooth brush, to which a little soap is given; then rinse the ornament in

lukewarm water; next dry the trinket and brush a little, and continue brushing until the luster reappears, which can be increased by pouring a little alcohol upon the brush and applying it to the trinket. Should this have become a little yellow, dry it in gentle heat, and it will appear as if new. Ivory that has become yellow may easily be bleached in the following manner: The article is placed under a glass bell, together with a small quantity of chloride of lime and muriatic acid, whereby chlorine is developed, and exposed to sunlight. Be very cautious not to breathe the vapors, as they are very poisonous. The bleaching power of the chlorine destroys the yellow pigment upon the surface, and the article will be restored to its original luster.

CLEANING SILVER.—A correspondent to *La Nature* sends the following recipe, the practical value of which he has tested for years: Cyanide of potassium, 30 gr.; hyposulphite of soda, 20 gr.; water, 1000 gr.; ammonia, sufficient quantity. The liquid is prepared cold and the silver is immersed cold.

Another subscriber sends the following recipe water, 1 liter; sulphate of ammonia, 5 gr.; sal ammonia, 10 gr.; cream of tartar 10 gr.; common salt, 10 gr.; alum, 15 gr. Dissolve and boil, and plunge the articles therein for a short time.

GOLD COLOR UPON BRASS.—To color brass gold color, dip it, after having been polished bright, into a diluted solution of neutral acetate of copper (crystallized verdigris), in which, however, must be contained no free acid.

Mat, greenish-gray upon same.—Paint it several times with a well diluted solution of chloride of copper.

Violet upon same.—Heat brass until you can barely hold it in your hands, and then, with a ball of loose cotton, paint it uniformly with ordinary officinal chloride of antimony, and it will color a handsome violet.

NICKEL-PLATING.—Dr. Kaiser describes a single process of nickel-plating. Prepare a bath of pure granulated tin tartar and water, and having been heated to the boiling point, add to it a small quantity of pure red hot oxide of nickel. A portion will soon dissolve, and give a green color to the grains of tin. Articles of copper or brass plunged into this bath in a few minutes acquire a bright metallic coating of almost pure nickel. If a little carbonate or tartrate of cobalt is added to the bath, a bluish shade, either light or dark, may be given to the coating, which becomes very brilliant, when properly polished with chalk or dry lime dust.

METALLIC OBJECTS may be colored by immersing them in a bath formed of 640 grains of lead acetate dissolved in 8,450 grains of water and warmed to from 38° to 90° Fahr. This mixture gives a precipitate of lead in black flakes, and when the object is plunged into the bath the precipitate deposits on it. The color given depends on the thickness of the skin, and care should be taken to treat the object gradually, so as to get a uniform tint. Iron treated thus acquires a bluish aspect like steel; zinc, on the other hand, becomes brown. On using an equal quantity of sulphuric acid instead of lead acetate, and warming a little more than in the first case, common bronze may be colored red or green with a very durable skin. Imitations of marble are obtained by covering bronze objects, warmed to

100° Fahr., with a solution of lead thickened with gum tragacanth, and afterward submitting them to the action of the above mentioned precipitate of lead.

SCIENCE NOTES.

DETONATING WATCHES.—Watches with alarm are an old contrivance, but one which at the appointed time fires a shot, certainly is a product of the present era, not much known yet, and still less "to Solomon in all his glory." The mechanism producing the effect is that in common use, and regulated at the dial; on the outer case rim is a spring which is cocked at the same time, a little piston protrudes upon which a cap is placed. At the appointed hour, the spring flies off, hits and explodes the cap with a noise sufficient to waken Rip Van Winkle himself.

AMALGAMATING salt for optical and mechanical use, is, according to the *Central Ztg.*, made by dissolving ½ kilo. mercury in a mixture of ½ kilo. nitric acid and ½ kilo. muriatic acid. The solution is prepared in a porcelain dish in a sand bath, under a well drawing chimney like a blacksmith's furnace. Another good method is to dissolve 8 parts of oxide of mercury in 100 parts water and 10 parts muriatic acid. Dip the zinc parts into this fluid for a moment, then rinse and brush them, and they will be found coated with a silver like coat. The application can be made with a small brush or sponge. Protect your hands against the poisonous properties of the salts of mercury; it might penetrate through the skin into the body and cause salivation and mercury poisoning.

PEARL fishing on the coast of Lower California is an important industry, no less than 1,000 divers being employed in bringing up the costly black pearl, which is found in a great state of perfection in the deep waters of La Paz. The pearl oysters are found from one to six miles off shore, in water from one to twenty-one fathoms deep. Merchants provide hats, diving apparatus, etc., for the prosecution of the business, on condition that they can purchase all the pearls found at prices to be agreed upon. These boats, which are usually of about five tons burden, sail up and down the coast from May to November, searching for treasures. The product of the year's work is about \$500,000, estimating the pearls at their first value.

The Berzelius pencil to cut glass is made in the shape of a pencil, red heated in the fire and applied to the glass, which it cuts with facility; the point of beginning is to be started with a file. It is composed of the following ingredients. gum arabic, 60 parts; gum tragacanth, 23; benzoin or benjamin, 23; lamp black, 180; water in sufficient quantity. The gum tragacanth is steeped in water for several hours, and the gum arabic is dissolved in a sufficient quantity of water, while the benzoin is pulverized very finely. The three components then are mixed, the lamp black and enough of water added to make a dough of a consistency to be moulded into pencil shape, which are finished by being rolled between two flat surfaces. With skill, a bottle may be cut into a spiral shape which draws out like a spring; the pencil is a very appropriate tool in the workshop of any tradesman.