WORKSHOP NOTES.

Grease spots in paper are first dampened with a fine camel's hair brush dipped in rectified spirits of turpentine, which, when dry, is completely removed by applying a little alcohol.

German Silver of a very fine grain and excellent quality is produced by melting in a crucible 55 parts copper, 23 nickel, 17 zinc, 3 iron and 2 tin. This alloy is equal to silver, of the same hardness, and not vitreous.

To Protect Steel.—After having cleaned the iron or steel article, anoint it with a solution of wax in benzine, using a fine camel's hair brush. By this treatment articles exposed to acid vapors may be protected against rusting, tools, etc.

Nickel-plated brass or iron, which has become coated with burned grease and dirt, may be cleaned without injury to the nickel surface, by boiling in a strong solution of soda or potash, rinse in water, and rub first with moistened and then dry rouge or chalk.

It is sometimes necessary to bore one or more holes in porcelain, but the usual way of doing this is not easy. If, however, an ordinary drill be hardened and and kept moist with oil of turpentine, it will easily penetrate the porcelain. The drill commonly employed in connection with scroll-cutting machines answer very well.

Good Cement.—Stir to a thick batter with silicate of soda, 12 parts Portland cement, 6 parts fine sand, 1 part infusorial earth. Very excellent for marble and alabaster. The cemented object need not be heated. After 24 hours, the fracture is firm and the place can with difficulty be found.

Recovering Gold from Galloons.—Previously boil the galloons for a short time with pure wood lye or solution of potash, intensified with calcined lime. When all the gold or silver spun silk threads are dissolved, wash the remaining metals several times with pure water, and collect upon a filter of blotting paper.

Quickly Prepared Cement.—Break an egg and empty its contents; add to the small remainder in the shell the point of a penknife full of white lead, and with your finger stir it into a batter. Slightly warm the fractured faces, and apply the cement. The piece will adhere very firmly after twelve or fourteen hours.

Another coating may be made if the steel or iron is covered with a layer of a mixture obtained by boiling sulphur with turpentine oil; this vaporates and leaves the sulphur upon the surface as pure sulphur, which again combines with the metal and forms sulphuret of iron, by heating the articles, if small, over a gas or alcohol flame.

Varnish for writing on glass may be made of 500 grains ether, 30 grains sandarac and 30 grains mastic. Dissolve and add benzine until the varnish imparts to glass a roughened appearance. Use cold.

The teeth of the anchor escape wheel of watches should receive a little oil. By steel forks, many watchmakers give a little oil to the ruby pin, to prevent the rusting of those steel parts; none is given, however, to those of aluminum, bronze, brass or gold.

A new method of tempering steel has been published by M. Clemandot. The metals are heated to a cherry red, and then compressed strongly until they are cold. The result is great hardness and an exceedingly fine grain. Steel thus treated makes excellent permanent magnets.

To obtain gold from old watch plates, take equal quantities of saltpeter and borax, and dissolve in a small quantity of water. Next glow-heat the gilt pieces and plunge them into this solution. By repeating this several times, the gold will loosen and precipitate in the fluid.

Soldering cast iron, says the *Engineer*, is generally considered to be very difficult, but it seems to be only a question of thoroughly making bright the surface to be soldered, and using good solder and a clean swab with muriatic acid. Sodium amalgam might be usefully employed for the purpose.

Gold Varnish for Metals.—Dr. Kaplas has found in picric and boric acids a gold varnish for metals, giving at once a firm and handsome surface. He recommends a clear solution of shellac in alcohol, with an addition of picric acid, and about ½ per cent. of boric acid.

Steel which has rusted can be cleaned by brushing with a paste composed of ½ ounce cyanide potassium, ½ ounce castile soap, 1 ounce whiting, and water sufficient to form a paste. The steel should first be washed with a solution of ½ ounce cyanide potassium in 2 ounces of water.

A cement that resists acids is made by melting 1 part India rubber, with 2 parts linseed oil, and add sufficient white bolus for consistency. Neither muriatic nor nitric acid attack it; it softens a little in heat and its surface does not dry easily; which is produced by adding 1/5 part litharge.

Steel tempered in oil is not as hard as that in water; softer in tallow than in oil; softer in sealing wax than in tallow. Small drills hardened in sealing wax require no annealing; very thin ones may be tempered by drawing them with a quick motion through the air; they also need no annealing.

Sweaty Hands.—Immerse your hands in freshly drawn well or spring water, and leave them therein until chilled; the evil of perspiring hands may thus be removed in about two weeks. The gentlemen who recommends above treatment says that he has handled polished steel on the hottest summer day since, without even leaving the imprint of his fingers thereon.

It is very injurious to expose a watch or movement to the heat of the sun for any length of time, especially when lately cleaned and oiled—the oil evaporates and becomes viscid. The generated vapors will stick to the train and give it a dull, dark look. It sometimes occurs in anchor watches that the shellac will soften and cause the pallets to loosen; wherefore it is necessary to protect the watch as much as possible against the sun.

To color iron and steel brown, dissolve in four parts water, 2 parts chrystalized chloride of iron, 2 chloride of antimonium, and a trifle of tannic acid, and apply this mixture with a cloth or sponge upon the surface, then let it dry. Repeat the application, according to the depth of the color desired. This coating fully protects the steel against humidity. The chloride of antimonium should be as little acid as possible.

Grease Spots in Marble.—Saturate carbonate of magnesia, previously heated to remove every trace of mechanically adhering humidity (still better is freshly calcined, cold magnesia—the so-called magnesia usta) with sufficient pure benzine, that it imbibes without parting with an excess, which only must occur upon being pressed together. Throw a sufficient quantity of this matter upon the provoking grease spot, and rub it upon the place. Perform this operation several times, and the spot will have completely disappeared.

Protection of Polished Brass.—To protect polished brass against dimming, it must be coated with a transparent varnish. Such a one consists of one part white shellac and 5 parts alcohol; or, one part shellac, 1 mastic, and 7 alcohol; or, 8 parts shellac, 2 sandarac, 1 Venetian turpentine, and 50 parts alcohol; or, 12 parts sandarac, 6 mastic, 2 elemi, 1 Venetian turpentine and 64 alcohol. The articles, before being varnished, must be well cleaned, and no more be touched by the hand, and heated to about 75° C.

To Perforate Glass.—To perforate glass by electricity, Fayes, (*Chem. Zig.*) makes a sheet of hard caoutchouc, 18 cm. long and 12 cm. broad, for a battery of 12 cm. spark, runs a brass wire through it, and fastens it with a screw. The wire end he moistens by a few drops of olive oil, places the glass plate upon it, and passes the current conduit of the other pole over the glass. The spark is then permitted to pass through the glass. By drawing the glass plate slowly over the caoutchouc, many small holes, closely situated together, are obtained, and the glass may be broken in their direction.

This is Mr. A. A. Common's receipt for the silvering of glass: Solution 1—Nitrate of silver, 1 ounce; water, 10 ounces. Solution 2—Caustic potash, 1 ounce; water, 10 ounces. Solution 3—Glucose, ½ ounce; water, 10 ounces. The above quantities are estimated for 250 square inches of surface. Add ammonia to solution No. 1 until the turbidity first produced is just cleared. Now add No 2. solution, and again ammonia to clear; then a little solution, drop by drop, until the appearance is decidedly turbid again. Then add No. 3 solution, and apply to the clean surface. A film was obtained in 43 minutes at a temperature of 56° Fahrenheit.

Lyons Gold, or Tombac.—According to Prof. Dr. Bottger, Frankfort, brightly scoured or polished copper articles, if immersed in a boiling concentrated solution of caustic soda, in which so-called tin grey, that is finely powdered metallic zinc were boiled for some time, with an excess of the former, in the alkaline zinc solution, becomes coated with a mirror-lustrous layer of metallic zinc. If an article thus coated, in a dry state, is dipped into olive oil, heated to 120° to 140° C., or sand of the same temperature, the zinc coat will unite with the copper base, and produce the gold colored alloy known by the name of tombac, or Lyons gold.

Cleaning Mat Gold Articles.—For cleaning mat gold articles that have become blackened by exposure, I would recommend a solution of 60 grams carbonate of soda, 30 g. cloride of lime, 15 g. table salt, and ½ quart water. It is best to restore the lustre either of bright or mat gold. Another recipe gives different proportions: 80 grams cloride of lime, 80 g. bicarbonate of soda, and 20 g. table salt; dissolve these ingredients in 3 litters distilled water. For cleaning an article, lay it into a porcelain dish, cover it with the fluid, and if difficult to clean, heat the latter; next rinse in alcohol and dry in sawdust. The fluid used is no longer good. Store the remainder for use, in glass bottles.