

horns in that smoking set come from Eagle Pass, Texas, and are lambs' horns. The other horns are from the heads of buffalo. They are mounted in Paris and sent back here. That dagger is a paper-cutter, and its sheath forms a thermometer. That cat is an inkstand. The head in a flaring bonnet is the same; lift the face and there is the ink well. That gold-umbered ship, with silver sails and a cargo encased in Austrian glass, is a liquor set. Here is a baby carriage that represents a slipper lined with plush, and here is another shaped like a canoe. That tree of gold, with a nest for eggs is for next Easter. This paper weight contains a Geneva timepiece, and this one has a clock on one side, a barometer on the other, a thermometer between, and a geographical globe above. That stork, raising itself within a lotus thicket to seize a frog, supports a thermometer; and that settor dog, with a bird in his mouth, holds up a barometer. This gilded key, with a pair of brazen dragons in the ring, is a common and popular fancy for a thermometer now. Those three Turkish pipes form a newspaper rack. Here are designs for open fire-places; for, after all, there is no bric-à-brac to compare to a bright open fire. And so the variety increases. There is no end to the designs. The designers are chiefly Europeans, who are worked at high pressure all the time."—*Jewelers' Circular.*

### THE TEMPERING OF SMALL DRILLS.

Much has been written on this subject, and still it is never exhausted; new methods for hardening this small tool, so useful to the watchmaker, are recommended every little while.

Small drills for drilling holes in arbors, staffs, etc., which are frequently very hard and difficult to be perforated, are tempered in the following manner: After the drill has been filed to its proper size (the cutting-face must not be flattened with the hammer), it is only moderately warmed, avoiding that it does not become red, when it is run into borax. The drill is thereby coated over with a crust of borax and secluded from the air. It may now be hardened by heating it only cherry red, after which it is inserted into a piece of borax, or what is still better, plunged into mercury; care is to be taken in the latter case, however, not to breathe the mercury fumes. The borax

accommodates itself to the heat of the drill, melts and cools it off. Various experiments, made by cooling in water, petroleum, etc., after the drill had been coated with borax, were not followed by results as favorable as when the drill was plunged into borax or mercury; it becomes exceedingly hard, without being brittle, and the watchmaker is able to drill articles which cannot be perforated with a drill tempered in the ordinary manner.

Many watchmakers make use of broken brooches for these small drills, in the belief that they are made of the best steel, which is not always the case, however, because the steel used for them is frequently burned, and of course, the steel is thereby rendered unfit for such small tools. In order to be certain of the quality of their drill, let them take a new piece of round steel.—G. L., in *Schweizer.*

### JEWELRY REPAIRING.

Probably there is not anything upon which the reputation of a keeper of a jewelry store is more easily built up than the neat and substantial repairing of the jewelry of his patrons. The intrinsic value of a filled ring may be almost nothing, but to the owner it is surrounded by a halo of associations which give it priceless worth, and if broken by accident, its neat repairing is very highly appreciated. So also the cleaning of jewelry, which, through discoloration has lost its beauty, is often looked upon with delight as marvelous.

Perhaps a few hints on this subject may be of use to some who have met with difficulty in making repairs to their satisfaction.

It is of first importance that the use of soft solder be avoided as far as possible in repairing articles made of gold or silver, and even filled and plated jewelry may be repaired with hard solder.

To repair a ring, the shank of which requires soldering, bury the head in a crucible full of wet sand, place a small piece of charcoal against one side, coat the break, previously cleaned by filing or scraping, with borax, and charge with solder; blow a flame against the ring and charcoal until the solder runs in. For articles which require to be protected from discoloring in the process of soldering, coat them with a mixture of burnt yellow ochre and borax, adding a little dissolved

gum tragacanth to make it lay all over, allow it to dry, then charge with borax and solder and heat sufficiently; boil out in weak pickle made of nitric or sulphuric acid. One important point is to wash the piece well in hot water with a little ammonia in it before attempting any repairs; this removes all dirt and grease, which, if burned on, cannot be removed.

If the article be of colored gold, boil out in pickle made of muriatic acid, and never coat with any protecting mixture. The solder must vary in regard to fusibility according to the quality of the article. For repairing most filled work, very easily melted solder is required, which may be made of 1 ounce fine silver, 10 pennyweights hard brass wire, adding 2 pennyweights zinc just before pouring; or, to make it more fusible, use bar tin instead of zinc; or, for strong silver solder, use only the silver and brass. For repairing most bright gold work, use gold coin, 8 pennyweights; fine silver, 3 pennyweights; fine copper, 2 pennyweights. For colored work, fine gold, 1 pennyweight; silver, 17 grains; copper, 12 grains; hard brass wire, 2 grains.

A good solder for repairing spectacles or other steel work is made by melting together equal parts of silver and copper. In soldering steel, plenty of borax should be used.

Very often the want of a rolling mill is a great obstacle to the making of solder, but it may be flattened very thin, although not with great regularity, by pouring on to a flat piece of wood, and putting the flat surface of a piece of iron, while it is still in a melted condition; a piece of cigar box is good to pour it on, as the odor emitted is not very disagreeable, and the solder may be melted in the hollow of a piece of charcoal, by using gas and a blowpipe.

For cleaning colored gold, a mixture of 1 pound sal soda, 1 pound chloride of lime and 1 quart of water will be found useful; it should be placed outside the building after mixing, and when settled, the liquor poured off and the sediment thrown away; with great care this may be used for cleaning gilt bronzes, and cheap gold, and plated jewelry, but caution is necessary, as it will corrode brass very rapidly.

To remove lead solder from badly repaired jewelry, place the piece in muriatic acid and leave till the lead is eaten away. It is best always to heat the piece gently and brush off the lead, while melt-