

of this process is that the coating obtained is not dull, but can be burnished. A transparent varnish is applied to preserve the metallic appearance thus obtained.

COLORING MATTER OF HAIR.—Mr. H. C. Sorby has succeeded in extracting the coloring matter from human hair. Diluted sulphuric acid he found the best solvent; he found that there are three coloring pigments—yellow, red and black—and that all the shades are produced by the mixture. In pure golden yellow hair there is only the yellow pigment; in red hair the red pigment is mixed with more or less yellow, producing the various shades of red and orange; in dark hair the black is always mixed with yellow and red, but the latter are overpowered by the black; and he found that even the blackest hair, such as that of the negro, contains as much red pigment as the very reddest hair. He concludes from this, that if in the negro the black pigment had not been developed the hair of all negroes would not be white or yellow, but as fiery a red as the reddest hair of an Englishman.

CEMENT FOR JOINING METALS WITH NON-METALLIC SUBSTANCES.—To obtain a cement for joining metals and non-metallic substances, mix liquid glue with a sufficient quantity of wood-ashes to form a thick mass. The ashes should be added in small quantities to the glue while boiling, and constantly stirred. A sort of mastic is thus obtained, which, applied hot to the two surfaces that are to be joined, make them adhere firmly together. A similar substance may be prepared by dissolving in boiling water two and one-fourth pounds of glue and two ounces of gum ammoniac, adding, in small quantities, about two ounces of sulphuric acid.

GASES OF THE STOMACH.—In a paper recently read before the Paris Academy of Medicine, the author expressed the opinion that food does not produce gas, and that the gases which are found in the digestive tubes proceed from the external air, the blood and fecal matter; these gases are continually put in motion by the pathological contractions of the muscular fibers of the intestines; expelled by the mouth, they are constantly renewed, and their production may be as incessant in a starving man as in one who is well fed. This symptom of production of gas, therefore, signifies an irritation of the stomach, which is always consecutive to a long-standing gastric dyspepsia. No therapeutic agent need be sought to combat these gases.

PREVENTIVES OF LEAD COLIC.—If working in lead, wash the hands several times a day in a strong decoction of oak-bark. Keep the hair short, and (if a painter) wear a clean cloth cap. The clothes should be frequently washed, and the hands also, especially before touching food. Before eating the mouth should be rinsed with cold water. A weak oak-bark decoction should be used as a wash several times a week. The body should be sponged night and morning with cold or tepid water, and the hair thoroughly washed every evening after work. The food should contain a large proportion of fatty substances, and milk should be taken in large quantities.

HOW TO MAKE COURT-PLASTER.—Soak isinglass in a little warm water for 24 hours, then evaporate nearly all the water by gentle heat, dissolve the residue in a little proof spirits wine, and strain the whole through a piece of open linen. The strained mass should be a stiff jelly when cool. Now stretch a piece of silk or sarcenet on a wooden frame, and fix it tight with tacks or pack-thread. Melt the jelly, and apply it to the silk thinly and evenly, with a badger hair brush. A second coating must be applied when the first has dried. When both are dry, apply over the whole surface two or three coatings of balsam of Peru. Plaster thus made is said to be very pliable and never breaks.

COSTLINESS OF FOOD.—Thousands of persons, we might say hundreds of thousands, in our great republic, begin life poor, live poor during life, and die poor because of the exceeding costliness of the foods they eat. Think of our eating butter at 35 cents a pound, when one can buy Indian corn at 60 cents a bushel. One bushel of hickory nuts has more oil in it than five pounds of butter. One bushel of Indian corn has more nutriment in it than \$2 worth of the best beefsteak you can find. One bushel of real graham flour has more nutriment in it than a barrel of superfine flour and 50 pounds of beefsteak. We spend ever so much to live when it need cost us but little, and our health will be all the better.—*Kochange.*

EMERY BELTS AND WHEELS.—A correspondent says that most users of emery belts and emery wheels do not use glue that is thick enough, fearing it may chill before the sand or emery can be spread. In making an emery wheel or belt, if the cloth has never been glued, it should be sized with glue about as thick as lead oil, and allowed to dry thoroughly before applying

the glue which holds the emery. Have the emery heated to 200° Fahr., and coat the belt or wheel with glue about as thick as molasses and roll it in the hot emery. If a wheel or belt thus treated is allowed sufficient time to become thoroughly dry, it will be very serviceable.

HOW TO SUCCEED AS A MECHANIC.—Every mechanic should study to be progressive. He should study to make every new piece of work a little better, in some way, than the last similar work which he has turned out. An eminent French coachmaker says: "I never build two carriages exactly alike, not because I do not build each one as well as I know how, but in building that I learn how to make the next one better. When I placed these carriages of mine in the exposition building, I thought them perfect, but now that I have spent three months looking over the carriages of other builders, I see that they are not so." Here is an illustration of the value of close observation and study.

GALVANIC DESTRUCTION OF SHIPS.—In marine structures of any kind, or structures only occasionally at sea, great care should be taken to avoid the use or combination of copper, or its usual alloys, with iron or steel. The galvanic action set up by even indirect connection of these metals is productive of rapid corrosion and pitting. This has long been observed and well-known to many, but its truth, though now strongly asserting itself, has been neglected by the constructors of ships, and especially in the navy, where gun-metal screws of many tons weight are used.

TO TEMPER DRILLS.—Select none but the finest and best steel for your drills. In making them, never heat higher than a cherry red, and always hammer till nearly cold. Do all your hammering in one way, for if, after you have flattened your piece out, you attempt to hammer it back to a square or a round, you spoil it. When your drill is in proper shape, heat it to a cherry red, and thrust it into a piece of resin or into quicksilver. Some use a solution of cyanuret potassa and rain-water for tempering their drills, but for my part, I have always found the resin or quicksilver to work best.

WAX PENCILS.—Now that such enormous deposits of mineral wax have been found in Utah, it may be of interest to point to a minor use of this substance for wax pencils, which, it is stated, are made by an Austrian firm, Messrs. Olenheim, Griffen & Co., for marking and writing on all kinds of wood, linen, cloth, and paper, and as a substitute for chalk for blackboards. It is stated that the marks with these pencils are not obliterated by moisture or rubbing, nor are they affected by acids.

CLEANING SPONGES.—A gelatinous substance frequently forms in sponges after prolonged use in water. A weak solution of permanganate of potassa will remove it. The brown stain caused by the chemical can be got rid of by soaking in very dilute muriatic acid. An old and dirty sponge may be cleaned by first soaking it for some hours in a solution of permanganate of potassa, then squeezing it, and putting it into a weak solution of hydrochloric acid, one part acid to 10 parts of water.

GREASE SPOTS ON CLOTHING.—In using benzole or turpentine, people make the mistake of wetting the cloth with the turpentine and then rubbing it with a sponge or piece of cloth. The only way to radically remove grease spots is to place soft blotting paper beneath and on top of the grease spot, which spot has first been thoroughly saturated with the benzole, and then well pressed. The fat gets now dissolved and absorbed by the paper, and entirely removed from the clothing.

PURITY OF MILK.—It is stated in a German paper that the purity of milk may be tested by the following very simple method: A well polished knitting-needle is dipped into a deep vessel of milk and immediately withdrawn in an upright position; when, if the sample be pure, some of the fluid will be found to adhere to it, while such is not the case if water has been added to the milk, even in the smallest proportions.

SIMPLE MODE OF SILVERING METALS.—Small articles may easily be coated with silver by dipping them first into a solution of common salt, and rubbing with a mixture of one part of precipitated chloride of silver, two parts of potassa alum, eight parts of common salt, and the same quantity of cream of tartar. The article is then washed and dried with a soft rag.

TO TEMPER GRAVERS.—Gravers, and other instruments larger than drills, may be tempered in quicksilver as above; or you may use lead instead of quicksilver. Cut down into the lead, say half an inch; then, having heated your instrument to a light cherry red, press it firmly into the cut. The lead will melt around it, and an excellent temper will be imparted.