

WATERPROOF VARNISH FROM OIL

A French patent for the above has recently been published, in which oils vulcanized with sulfur chloride are dissolved in amyl acetate. The following method of preparation is used: One thousand parts of castor oil are mixed with 2,000 parts of amyl acetate and stirred up well with 250 parts of sulfur chloride. In a short time, the mixture sets to a fairly solid jelly and gives off large quantities of hydrochloric acid from the acetyl chloride formed. If, however, the product be left in a tightly closed vessel for several days it will be found to have become completely liquefied and dissolved. The acid is then neutralized with barium carbonate and, after the precipitate has been removed by decantation and filtering, a clear almost colorless liquid is left consisting of a perfect solution of the vulcanized oil, hitherto regarded as insoluble. This solution may be used for waterproofing fabrics, leather, paper, etc. On the other hand, if it be mixed with other solvents, *e. g.*, alcohol, benzene, acetone, acetic ether, and employed to dissolve a certain amount of nitrocellulose, there results an excellent varnish for glossy leather—the gloss resisting action of soap, friction, etc.—a leather polish, a varnish for oil cloth and when mixed with pigments, a waterproof, quick-drying paint which will stand washing and changes of temperature.—M.

SHELLAC DERIVATIVES

A paper on the "Investigation into the Inhibition Exhibited by Some Shellac Derivatives" by Messrs. A. P. Laurie and C. Ranken was read at the Royal Society, London. The paper dealt with experiments made on the substances obtained by boiling shellac with carbonate of soda or borax. The solid substances, very similar in consistency to gutta-percha, are found to expand rapidly when placed in water. The control of the expansion by the addition of soluble salts is not the same as in the case of gelatine, since, at any rate, in a large number of cases, it does not seem to depend upon the nature of the salt but simply upon the strength of the solution, and the amount of expansion increasing with the diminution of the strength of the solution. If the expansion is allowed to become complete in cold water, the mass cannot be contracted again, but if expansion takes place in a salt solution, then contraction will take place again if the mass is put into a stronger solution. Strong salt solutions are also found to precipitate the soluble portions of the shellac-borax compound.

As a result of the experiments described, the authors suggest that the facts can be best explained by supporting the shellac-borax mass to consist of a soluble organic nucleus surrounded by elastic diaphragms through which the organic nucleus cannot pass, but the salt molecules can pass, the organic nucleus being soluble in water but insoluble in strong solutions of salt.—M.

CELLULOSE TURPENTINE

During the treatment of wood for cellulose by the sulfite process there is obtained a considerable amount of a turpentine-like oil mixed with various impurities containing sulfur and having very objectionable odors. The amount of turpentine so obtained reaches as much as 22 lbs. per ton of wood treated where pines are used. The oil has recently been extensively examined, says a contemporary, the sulfur compounds being first removed by means of mercuric chloride dissolved in alcohol. The principal portion of the oil consists of alpha-pinene which is well known to be the main constituent of ordinary turpentine oil. It is, therefore, clear that this terpene is very stable or it could not stand the drastic treatment of the sulfite process. When the sulfite process is used, the pine is almost completely broken down to para-cymene. Beta-pinene is also present in the oil and probably di-pentene.—M.

SUBSTITUTE FOR OIL IN PAINT

According to the *Oil and Color Trade Journal*, a mixture of 100 parts of rosin, 20 of soda crystals and 50 of water melted over a fire and mixed with 250 parts of water containing 24 parts of liquid ammonia gives a syrupy liquid which can be used as a substitute for boiled oil or turps in the manufacture of paint. Such paint dries quickly without requiring any driers and has good covering power and withstands the influence of temperature, wet and dry. The substitute is improved in appearance and gloss by the addition of a mixture of 2 parts alcohol, $3\frac{1}{2}$ parts ordinary glycerine and 1 part of wax in proportions up to 10 per cent.—M.

DYE FROM SULFITE LYES

After chemical research succeeded in the useful application of sulfite lyes for the production of alcohol and of coal dust for heating purposes, an engineer in Finland, says the *World's Paper Trade Review*, claims the economical production of valuable color stuffs from the remarkable sulfite off lye. He claims especially the new production of methyl alcohol, cymol and furfural for the transformation into coloring material as they are gained in Germany from coal tar. The inventor has claimed patents in the Scandinavian countries, Russia and Switzerland, and a color factory is being erected at Tammerfors, the centre of the Finnish textile industry, with a capital of 200,000 marks.

The inventor, Dr. Wiljanen, delivered an interesting lecture relating to his invention at the Technical Club, Tammerfors, and exhibited about ten different colors produced from cymol and numerous others containing cymol as a substantial part. He explained that about 300,000 kg. of cymol are obtainable in Scandanavia as a by-product wherefrom yellow and red cotton and wool colors could be produced in a simple manner.

Finland's largest paper mill association has installed apparatus in its factories for separating wood spirits, cymol and furfural and investigations are being continued at the new Tammerfors factory with a view to obtaining new raw color material from home products. Preparations are being made to start, in the near future, the manufacture of cymol colors.—M.

ELECTRIC ARC WELDING

The welded fastening, reports the *Railway Mechanical Engineer*, has always been looked upon as a stronger fastening than the riveted or bolted joint. As a general proposition the riveted or bolted joint has the tensile strength of the original piece while the welded joint is as strong as the original section. There are two kinds of electric welding, known as the carbon electric welding and the metal electrode welding. In the former, an arc is drawn between a carbon electrode, the piece to be welded and the metal to be added are fed into the arc in the form of a "melt-box." The method is not used extensively in railway work due to the fact that the welding may only be done in the horizontal plane in this manner and that the work is in general inferior to that done with the metal electrode process. The metal electrode process as the name implies—a metal electrode—the arc being drawn between the electrode and the piece being welded. The heat of the arc melts the metal of the piece and the metal of the electrode simultaneously. As the metal of the electrode melts, it is drawn across the arc and a complete and homogeneous union is formed with the molten metal of the piece. With the exception of work with certain electrodes (manganese steel and slag-covered electrodes) the electrode is always made the cathode or negative, *i. e.*, the current flows from the piece being welded to the metal electrode. The voltage required for metal electrode welding is about 20 volts and direct current is necessary.—M.