

man manufacture," which is very unwholesome. The best color from cochineal we have made is as follows:  $\frac{1}{4}$  lb. powdered cochineal, 2 ounces washing soda, "bruised," 2 ounces rock alum, "bruised,"  $\frac{1}{4}$  lb. cream of tartar, put 3 pints of water in a copper pan, add the soda and the cochineal; when it has boiled, add the alum, gradually, or it will flow over; keep stirring till it is dissolved, and boil up again; then add the cream of tartar, boil two or three minutes longer, and strain through a small hair sieve for use; these quantities can be reduced in the same ratio, if required. No utensil of tin or iron must be used with this receipt, or it will give a purple cast to the color. If desired, some of this liquor can be dried down by evaporation to a paste, and used on the slab; the only advantage in this, is for stripes or casings, and saving the pans. Saffron, as a yellow, for best goods, cannot be equalled, and is best kept with spirits, but water, for small quantities, answers the same purpose. A remarkable substitute for this article is a solution of logwood chips, made the same as strong tea, but it will only act when fresh, and the sugar is reduced either by cream of tartar or any of the acids used to cut the grain, and which is a great recommendation; as it instantly detects the omission, by turning the boil to a dirty color, which, when discovered, the lowering can be added in solution, and it instantly changes bright. The very high price of saffron has made this a valuable discovery for cheap goods, while it is equally as wholesome to use. Indigo, dissolved with sulphuric acid, makes a fine blue, one ounce in powder to a quarter of a pound of vitriol; it must be mixed in a jar or pot holding about a pint, and must not be put into syrups while on the fire. Carmine, though highly prized as a color by a trade, is now generally bought. The process of making is simple, but troublesome, and not suited to the present work. If for any purpose a variety of colors is desired, use the following: Purple (cochineal and weak liquid blue); orange (yellow with red); green (blue and yellow). It will greatly accelerate the work, and be much more convenient, to keep colors for stripes and castings ready for use; they ought (with the exception of cochineal, saffron, etc.) to be worked with a palate knife, with some sweet salad oil, on a piece of stone, into a paste, and kept in use for jelly pots. Where clear castings are required of a different color from the original boil, keep some in the pan for the purpose of mixing in cochineal, etc. Mind it is strong, and does not require boiling in more than a minute or so, or the sugar will become very weak. Some prefer doing this on the slab, but for many goods it does not look so well. Keep a roller handy, to make your casing even and regular. Should you find it does not adhere properly to your pulled sugar, wipe it over with a damp cloth, or you can even wet it with your hand slightly, the heat in the body of the pulled sugar drying it.

A LETTER from India to a London paper, states that the monkeys of that country seem to be firmly persuaded that the telegraph lines and poles were erected for their special use and behoof, in performing gymnastic exercises.

## Machinery and Manufactures.

### Boiler Incrustation.

The Polytechnic Association of the American Institute held its regular weekly meeting on Thursday evening, Jan. 11, the President, S. D. Tilman, Esq., being chairman.

The subject being, "Boiler Incrustations," part of the report of Prof. Chandler, which we published Dec. 27. was read.\* It was stated that Prof. Chandler, after consultation with the Central Railway officials, estimated that \$700,000 yearly would be saved by purifying the water on that road and its branches; and, as all the railways in the country amount to 100 times as much, \$70,000,000 would be saved if they all used pure water. To this it was replied that the water on the Central, between Syracuse and Rochester, was of the worst quality; and that some lines, such as the Harlem, had nearly pure water; consequently a general conclusion from this particular instance was of little account. The recommendation to blow off frequently, a few gallons at a time, was criticised as an imperfect remedy, and in some cases an aggravation rather than a remedy. Napier's experiment was referred to, showing that excessive blowing off increased the incrustation, because the sulphate and carbonate of lime were thrown down by heat; and the more water was pumped in, the more of these impurities were precipitated; and the water blown off was purer than the water pumped in. The trial in Austria, four years ago, of spraying the feed into a separating vessel in the steam room, was cited, showing that the heat in a locomotive was sufficient to precipitate all the lime; and that, if time were allowed, it would fall to the bottom of the separator; and, not having heat to bake it, it could be blown out as mud. Mr. Weissenhorn's process of separating the lime by the exhaust steam was adduced to show that the outlandishers were not ahead of us in this method of avoiding lime incrustations; but to this it was replied that the heat of 212 deg. was insufficient to precipitate all the lime; 280 to 300 deg. were required; therefore Mr. Weissenhorn's process was partial and incomplete, though good as far as it went. Mr. Zerah Colburn's proposal to supply water at steam temperature, 350 deg. or more, to locomotives was cited; and it was argued that if that plan were feasible, the lime could be separated by heat in the close tanks at the stations; and the water evaporized in the boilers might be so pure that no incrustations could be made from it; and there would be the further advantage of saving a quarter of the work done by fire on the line. Martin's invention to supersede surface condensation, by separating the lime in a heater, was cited, as perhaps applicable to the stationary heating tanks of railways.

Thursday evening, Jan. 18, the President, S. D. Tilman, Esq., being chairman.

At last the subject of boilers is "exhausted." A few points are worth mentioning. A Texan gentleman suggested that if the boilers were placed aft, and the cabins forward, it would be

\* See February No. of this Journal.