

solutions, or soap baths, are laid down in a solution of potassium permanganate, with or without an addition of sulphate of magnesia, until the bath is decolorized—that is, until the permanganate is decomposed. Brown peroxide of manganese is then precipitated upon the fiber, while a part of the permanganate effects the bleach. By this action free alkali is evolved; this in many cases, as in bleaching silk or wool, would act injuriously. To obviate this difficulty, the solution before entering the yarns, is mixed with sulphate of magnesia, which prevents the formation of the alkali, innocuous hydrate of magnesia and sodium sulphate being formed. After the tissues have been thus exposed to the action of the permanganate, the oxide precipitated upon the fibers must be removed; for this purpose the yarns are lifted from the bleaching liquor and washed in a dilute solution of sulphurous acid. Ordinarily the yarns must several times be alternately treated in baths of permanganate and of sulphurous acid, and finally the bleached material be washed clean. As regards the quantity of permanganate employed in this process, Pubetz says: "A bleaching bath containing, according to the nature of the fiber to be decolorized, 4 to 10 lbs. of permanganate of potash or of soda is sufficient to bleach 200 lbs. cotton, linen or hempen tissues or yarns." In the chapter on bleaching wool or woollen yarns, Pubetz further observes: "For 100 lbs. well-scoured wool, 4 lbs. permanganate of potash or of soda must be mixed with 1½ lbs. sulphate of magnesia. Usually a barrel of sufficient capacity is taken for this purpose, the solution of permanganate and of sulphate poured in, and the material to be bleached loosely laid down in it." As to baths, the following is remarked: "The sulphurous acid is prepared in a special vessel. As much sulphurous acid is poured into the water as is required to destroy the manganese oxide fixed on the fiber." The wool thus treated is washed clean in water and finally entered into a soap bath containing 1½ lbs. commercial soft soap mixed with sulphate of soda, 48 lbs. water, and ¾ lbs. spirit sal ammoniac (sp. gr. 0.9). On silk bleaching Pubetz observes: "The cleaning of silk in the form of yarns or tissues must be done very carefully. The silk being properly cleaned by soap baths, a permanganate bath is given, and, after being well drained from the liquid, the silk is entered in a sulphurous acid bath, when it will be bleached in a short space of time; finally it is well washed."

After the new method of Manzoni, the tissue, cleaned as usual, is at once treated with a solution of potassium permanganate to which sulphuric acid has been added; thereby the washing with sulphuric acid is saved and less permanganate used. Manzoni has proved the advantages of his method by the following observations:

"(a) In neutral solutions the reduction of the potassium permanganate takes place regularly, but slowly. (b) In alkaline solutions the reduction very probably takes place in two phases. In the first, the violet coloration of the solution changes to green when the cotton is entered, a partial precipitation of manganese peroxide upon the fiber taking place. In the second phase the green manganate very slowly loses its color, and the manganese remaining in the solution is very slowly deposited upon the fiber. (c) In acid solution the reduction takes place much more regularly and in a shorter time than in the other two conditions. The alkaline bath was prepared by adding caustic soda or caustic potash in the quantity theoretically required for the transformation of the permanganate into manganate; the acid bath contained an addition of as much sulphuric acid as is theoretically necessary to liberate all permanganic acid. The yarn which is treated in the acid or neutral bath is as strong as before, but that which has been in the alkaline bath seems to be rotten all through; it can be easily torn to pieces, particularly when the material is treated with

2 per cent. solution of permanganate, even before immersing it in the decolorizing solution of sulphurous acid, or even in dilute sulphuric acid. If as much sulphuric acid is at once added to the bath as is necessary to dissolve the manganese oxide formed by the reduction, the bleach can be obtained in one bath without prejudice to the strength of the fiber. This is, in fact, the case if a sulphuric acid bath (5° Be.) is employed, when the yarn is not first colored brown, but becomes white direct. If cotton yarn, which has been boiled or scoured with soda lye of 4 gram. per liter under 2 atm. pressure is operated upon, and then well washed, the yarn is perfectly bleached by an immersion of about five hours. It is necessary, however, to gradually add the permanganate as a concentrated solution, with stirring, in two or three portions, and to raise the temperature to 15° to 20° C.; ¼ kilo. potassium permanganate is enough to obtain a good ordinary white upon 100 kilos. gray cotton yarn."

So much about the methods thus far proposed for bleaching with permanganate of potash. It is desirable that the important suggestions presented to the practitioner by these researches be profitably utilized. With the low price of potassium permanganate and the small quantities of it required, especially after the new method, experiments in practice only can be recommended.

INTERNATIONAL SHEEP REGISTRATION.

The council of the National Sheep-Breeders' Association of England have adopted the following resolution: "That in view of the important interests involved, and of the great advantage that would accrue to breeders of registered sheep by the adoption of mutual arrangements for the transference of registered sheep from their record in one country to that of another; and also of the importance of devising means to prevent the substitution of unregistered sheep for registered sheep, etc., this council resolves that an international conference of representatives of the sheep-breeding industry throughout the world be invited to assemble at York in June, 1900, at the time of the Royal Agricultural Society's meeting in that city, for the purpose of considering the above or any other questions affecting the interests of sheep-breeders generally. That the secretary be and is hereby authorized to issue invitations to kindred societies in other countries to send delegates to the proposed conference; but in the event of there being no such society in any country, then the secretary shall send the said invitation to the Governmental authorities of such country, asking them to nominate delegates representing the sheep-breeding industry of that country. That the executive committee, together with the secretary, be constituted a special committee to carry out the foregoing resolution." Such a matter as the foregoing affects very considerably, although indirectly, the question of the world's supply of wool.

THE PRACTICAL EXAMINATION OF LOGWOOD.

So far no process has yet been devised for the determination of the actual amount and the character of the coloring matter in logwood extracts. As is well known these contain two coloring principles—haematoxylin, which dyes blues with chrome and violets with alumina mordants, and haematein, which dyes black with chrome and iron mordants. Extracts prepared from fresh wood contain haematoxylin with a little haematein only, while if the wood has been subjected to an ageing process or the extract is oxidized then the latter will consist largely of haematein. The only manner in which logwood extracts may be examined for strength is by means of comparative dye tests, says the Dyer and Calico Printer, and such should be made with the sample under examination and