

do, possibly, 50 or 60 per cent. of the work. You often hear of the tubes in a water-tube boiler buckling up and having to be taken out; you often hear of the bagging of the fire-sheet in tubular boilers. Why is this? The specific gravity of the oil is lighter than that of the water; the oil does not settle in its natural state. We explain it as follows: The oil coming into the boiler floats on the water; there is just a sufficient quantity of fresh water coming in to convey salts of lime, magnesia, etc., which are thrown out of solution, chemically combining with the animal oil as insoluble oleates, and mechanically combining with the mineral oils as a heavy mass, both these chemical and mechanical combinations being of a greater specific gravity than the water in the form of little globules, sinking to the bottom, the great chemical affinity and adhesive properties of this mixture causing them to adhere to the hot metal, and they, being a perfect non-conductor, retarding the transmission of the heat units to the water, concentrating heat in that part of the plate, causing the iron to melt, and the pressure in the boiler forces it down.

Sodium salts, so commonly found in water, or where it is used to counteract this action, saponifies the oil, causing the boilers to foam and carry over into the engines, and should not be used. This defect can be successfully handled with tannin extracts, the tannates forming complex organic compositions with the oils of

an inert, light, powdery nature, having no chemical affinity or physical adhesive properties and readily washing out with the water at the opening of the boiler. To prove this go to the tannery and watch the tanner take the hides out of his vat after he is through with the tanning process, and when he lets the liquor run out of the vat you will find two or three scoop shovels full of an inert powder, which readily dries out and is termed pure tannin by the tanning experts. They claim that this is insoluble, and are in want of a solvent so that they can successfully use it for its tanning properties. We do not believe this to be the case, as the tannin in this mixture is, chemically speaking, part of the mixture, and the tannin is satisfied by the fatty matters contained in the hide. We aim to get this same reaction with the oil by pumping into the boiler a properly blended mixture of slippery elm, starches, sugars and tannin extracts.

We have found that we can successfully cope with most of the deleterious actions taking place in steam boilers with vegetable matters, and vegetable matters only, sometimes using from 5 to 10 per cent. of carbonate of soda to partially cut the starches and aid in the action of the sugars, but, correctly speaking, we are vegetarians on this subject, and do not believe that perfect results can be obtained from any other methods known to science.

LOGGING IN MAINE.

THE drive of 1895 contains 35,000,000 of logs, which is an unusually small cut. It generally averages from 45,000,000, to 50,000,000. Undoubtedly the small cut this year is owing to the few operators, and the few operators are owing to the doctoring of the tariff. The driving crew was much smaller than usual this year, only ninety men being employed. Just before the drive arrives the wives, mothers and families of many of the drivers are on hand to draw some of the wages of the men, as oftentimes it is spent all too quickly unless they do obtain some of it before the men arrive. It will take more than \$20,000 to pay the help this year. Add to this the bills for provisions, utensils, etc., and the expense is well up to \$60,000. The East Branch drive is just behind the West Branch, and has 100 men employed, who will bring 17,000,000 of logs.

LARGE CARGO OF LUMBER.

The British steamer Strathgyle cleared from Scranton, Miss., recently with 3,203,000 superficial feet of lumber in the shape of deals for Rotterdam. Barring the Great Eastern's cargo of deals out of Montreal a few years ago, the Strathgyle's is the largest cargo of lumber or timber ever carried out of any port of the United States. She was cleared by Hunter, Benn & Co., of Mobile, Ala., timber shippers.

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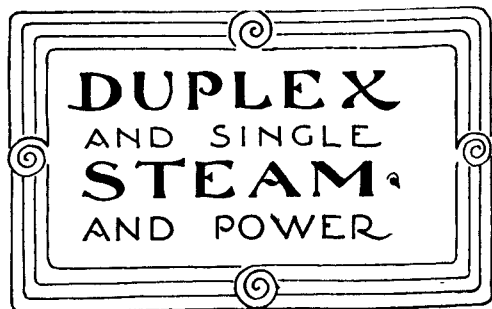
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