

has increased from less than one million rolls in 1878 to 8 250,000 rolls in 1896, the increase in value being from \$75,000 in 1878 to \$465,000 in 1896, and the industry is steadily growing in importance, while, next to the United States, Canada produces the cheapest wall paper in the world. The last and strongest argument offered was that the effect of abolishing the present specific duty would not benefit the consumer, as Canadian-made papers are retailed as low here as American goods are in the United States. The only result would be that, instead of being manufactured in Canada, our wall paper would be made in a foreign country.

John L. Gallette was the spokesman for the bag and jute interests. Three out of the four bag manufacturing companies of the Dominion were represented—the Beaver Bag Company, Dominion Bag Company and Canada Jute Company—the fourth being in Toronto. Hessians or burlaps, from which bags are made, are imported in the rough, and have always been on the free list since the first bag factory was started, twenty years ago. This cloth passes through five different machines, namely, cropping, damping, calendering, measuring and cutting into sizes for bags. Imported finished Hessians pay a duty of 10 per cent., and to remove it would be to throw all these machines and operators into idleness. Manufactured bags pay twenty per cent., and the removal of this would be to transfer those employed into the miserable ragged community such as the workers in the jute centres of Europe. There was no combination as to prices among the bag companies, and every order was subject to keen competition. They, therefore, asked that Hessian imported in its rough state be admitted free, that the duty on finished Hessians of ten per cent. should be at least retained, if not increased, and that the duty of twenty per cent. on bags should remain as at present.

Elisha Fulton, treasurer of the Consumers' Cordage Company, said that the cordage and binder twine industry had settled Manitoba and had built the Canadian Pacific Railway. The first binder twine he had made for Mr McCormick, of Chicago, for twenty cents a pound, would bind as much in one day as the present binder twine at three to ten cents a pound would do in a week. The ropewalkers felt that they had built up the whole western country, and they were entitled to some consideration. The United States was their only competitor. England had tried to make it, but had not been successful. The mills of the cordage and binder twine industry are situated at Halifax, St. John, N B, Quebec, Lachute, Montreal, Kingston, Port Hope, Toronto, Hamilton and Brantford, and give employment to 1,500 to 2,000 operatives. The average monthly pay list was \$30,000. For many years the cordage business was in a very deplorable condition, and mills were running at a serious loss. The Consumers' Cordage Company was organized in 1890, and for two and a-half years earned about twelve per cent. on its capital, but the change in duty and the insolvency of the largest cordage and twine company of the United States, caused the company to incur heavy losses and impairment of capital. He called attention to the special difficulties experienced in the manufacture of binder twine: the uncertainty which prevailed respecting the demand for twine for the coming harvest, and with a poor harvest the manufacturer may have to carry over a large portion of his product. The machinery he used had to be imported at a duty of thirty per cent. Then the effect of prison labor had been to deteriorate the quality of binder twine, and to crowd out legitimate manufacturers. He supposed that the Government had in view the supplying of twine to the farmer at a lower price, but this had been thwarted by the fact that the twine had not reached the farmer directly, but had been sold to the jobbers' agents, etc., and the farmer had paid the retail market price.

Mr Fulton quoted figures to show the quantity of binder twine and cordage imported into Canada during the last six years, as well as the quantity manufactured by Canadian mills, and declared that any reduction from the present duty would so largely increase the importations that Canadian manufacturers would be surely driven out of the business. To keep the twine mills in operation on a living basis it was absolutely necessary that the duty should be made the same as it was prior to 1893. The farmers bought the very cheapest twine they could get, and this would break in the binder, causing constant delays.

THE TECHNICAL VALUE OF PURE WATER.

BY A. ASHMUN KELLY.

This is rather a broad subject, but I shall confine my remarks to the consideration of pure water as related to the color producing and color-using trades. Color manufacturers, as well as dyers, have a much keener appreciation of the value of pure water than most physicians. It is absolutely essential in the production of certain pigments, and equally requisite in some kinds of dyeing. The least trace of iron or lime, for instance, will often work an untold injury to certain chemical pigments. Filtering only partially removes obnoxious foreign elements in the water, for the filtered water may be clear as crystal and yet contain at least traces of injurious elements, organic or otherwise. We are told by chemists that even distilled water, of the ordinary kind, is not free from such defects, though that is drawing it down pretty fine, as for all practical purposes distilled water is pure enough. The great trouble is the costliness of distilling vast quantities of water, such as color makers and dyers use.

Water is the greatest solvent known, readily dissolving not only solids, but gases also. It is due to this remarkable property of water that so much foreign matter, solid and gaseous, is found associated with it in its natural state. According to its source or associations it is found more or less so constituted. Thus, water from the clouds, as in rains, water from the surface of the earth, as in streams, and water from beneath the surface, as in springs, all possess varying amounts of gases and solids, vegetable or mineral matters. Rain water would give us water in its purest natural form, were it not for the fact that it takes in, during its descent from the clouds, much impurity always found in the atmosphere, but especially near large settlements. Sulphuric and carbonic acids are found in rain water, and ammonia is another frequent constituent. Much depends also upon the character of the surface of the roof upon which it falls. Rain water is often drained from roofs for culinary, as well as manufacturing purposes, and usually little attention is paid to the matter of the roof's character. First, it should be clean, then for the first few minutes of a rain the water should be diverted away from the cistern or reservoir, to run off the dirt. A slate roof is excellent where rain water is to be caught, but a tin roof, coated with graphite paint, is quite unobjectionable, as the paint is neutral and does not easily wash off. An iron paint surface would be very bad for the purpose, so also would be red lead paint, Venetian red, metallic brown, ochre, or any mineral containing iron oxide or lead. Where the location is somewhat distant from manufacturing centres, quite pure water may be obtained from this source.

Rain water is in every way superior to well or river water, because it is soft, denoting freedom from those mineral substances, such as the iron and lime salts principally, which are so inimical to certain colors.

River water is better than spring water, though the former may appear full of foreign matter, and the latter appear as bright as crystal. This is because matter held in suspension, as in river waters, is much easier to remove than the matter in solution. Thus river water, full of organic matter, mud, etc., may be quite clarified by running it into basins or reservoirs and allowing it to settle. This is the method usually employed by large cities and towns for their water supply. Such water is really more wholesome to drink than certain well water of crystalline brightness, and which may be full of impurities hid from the eye. Where a river water runs over an unpolluted course for some short distance before being pumped up into the basins or reservoirs, it is said to become perfectly wholesome for drinking, although far from being clear, but for dyeing purposes it would need even more than mere exposure to the sweetening influence of air and sun to fit it for use.

Nothing could be said in a small space to denote the importance of pure water for the dyer's purpose that would so well indicate this fact as the simple statement that 1 lb of lime salts, often found in water, is sufficient to destroy the detergent power of 10 lbs of ordinary soap, 1000 gals of such water would therefore destroy the power of at least 50 lbs of soap. Nor is this the whole extent of the mischief. The insoluble soap thus