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SCIENTIFIC AMERICAN SUPPLEMENT

No. 618.

For the Week Ending November 5, 1887.

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DISTILLATION OF WOOD.

The Cadosia Chemical Co., at Cadosia, N. Y., has several establishments in that vicinity for the distillation of wood, which has now become an extensive and important industry.

Almost any of the harder varieties of wood will answer, but those chiefly found and used by this company, in the region it now occupies, are birch, beech, and maple. Pine, hemlock, and soft woods will not answer. The general operations and products of the company are as follows:

Contracts are made with the neighboring farmers for the purchase of standing wood, on which an agreed amount is paid in advance, balance payable as fast as the wood is cut by the company. The wood is delivered at the works in ordinary four-foot lengths and is then piled in the distilling retorts, of which there are in the Cadosia still house 24 pairs. These retorts consist of cast iron, somewhat in the form of a steam boiler, about 10 ft. long and 4½ ft. diameter, having a large manhole at one end and condensing exit neck at the other end. When a retort is filled with wood, the manhole is closed and sealed; a slow fire is then started under the retort. The first products of the distillation, consisting of alcoholic vapors, are passed through a condensing worm, and the liquid thus produced is subsequently redistilled, and this product then sold. Most of it goes to Binghamton, N. Y., where it is refined, and put on the market as wood alcohol.

The second products of the distillation, consisting of acetic vapors, are condensed as before described, and the liquid is mixed with lime, thorough mixture being effected by mechanical means, thus producing acetate of lime—used in cloth-printing works. The crude acetate is placed above the retorts on racks, where it is dried, and is then ready for market.

The third products of the distillation, consisting of tarry matters and naphthas, are shipped as produced, and subsequently refined.

The last products, consisting of heavy tars, are used at the works as fuel. When the distillation is finished, there remains within the retorts a mass of clean and beautiful charcoal, ready for market, and all of it is sold to the steel makers. Most of it goes to Troy, N. Y., where it is chiefly used in the production of fine steel.

The principal fuel used in these works is bituminous coal, which together with the crude lime required is brought to the works by railway.

We are indebted to a correspondent who resides in the vicinity for these particulars, which are only intended to convey a very general idea of the mode in which some portions of the forests in Delaware County, N. Y., are now being utilized.

The tanning of leather has been and still is a leading industry in this region. This involves the use of large quantities of bark, the trunks of the trees being sawed up and converted into lumber.

Many of the hills in the above vicinity are underlaid with bluestone, and there are several fine quarries of this noble building material.

COALING AT SEA.

In the days when war ships were under sail, and relied for propulsion only upon the winds, no thought was taken when they set out on a long journey how they should return. The same winds that bore them away fetched them back, and though the course was not always straight, and often longer one way than the other, there was not any danger, even when maintaining top speed, of falling short of motive power. Wind is easier found than coal at the end of long voyages, and now that the modern war ship is a steamer, the question of coaling becomes of the highest importance. Big ships cruise between coaling stations, and, when they set out on long voyages, their destination must be a coaling station, otherwise they cannot return. The recent maneuvers in the Irish and English Channels and North Sea showed that the great war ship of to-day requires enormous quantities of coal. Its furnaces seem insatiable, and there is good authority for saying that during the recent fortnight's maneuvers of the British fleet, it was an occurrence by no means uncommon for a ship to empty her bunkers before she could get into port, notwithstanding that a fifty mile run would have brought her there. When we consider ocean voyages, the question of fuel supply becomes really serious. Should she come into hostile waters after a long run, the chances of maintaining anything like effective activity would depend upon making a port bearing her own flag, because, under the neutrality laws, she could not coal even at a station belonging to a friendly power. The English naval authorities, always alert and far sighted, realized long ago the importance of having coal at hand, and when the present great steam fleet was yet under construction, they set themselves to the task of establishing fortified coaling stations all over the world's waters. Experience with the big ships, however, has shown that even this is not enough, because of the imminent likelihood of running short of coal while yet in deep water, and for some time they have sought to discover a practical means of coaling at sea.

So far, none has been found, though many plans have been suggested. The system of broadside coaling, to wit, laying a collier alongside, as in dock, is looked upon as wholly impracticable, and very reasonably so, because, save in a smooth sea, it cannot be accomplished without great danger. Another plan, not new, save as to apparatus for carrying it out, was recently described by a retired naval officer before the Royal United Service Institution. It consists in passing coal by means of a whip and running sling from a collier in tow of the ship to be coaled. The colliers to be used should be steamers, fast ones at that, and they ought to have straight stems, with no hamper forward in the shape of bowsprit or head gear. The originator of the plan says that she could then be brought up stem on to within only a few feet of the stern of the ship to be coaled, that is to say, near enough to permit hauling lines to be hove aboard. This, of course, could be done as easily in rough as in calm weather, if both vessels have a full head of steam up. With the aid of the hauling lines, two stout towing hawsers are passed aboard, and then other and heavier hauling lines follow. The hawsers are crossed from the stern pipes of the war ship to the bow ports, hawse pipes, or to any other apparatus convenient to special coaling, and are then made fast for towing. The two vessels now start up, holding a moderate rate of speed, just enough to keep the towing lines fairly taut. Two flexible steel wire ropes are now passed and secured in the following manner: Aboard the war ship, the ends of these steel wire cables, previously rove through two travelers with patent hooks, to be rove in turn through stout blocks, secured by wire straps at sufficient height up the mizzenmast, and the ends brought and secured to the foot of the mainmast. Aboard the collier the ends must be rove through leading blocks on each quarter of foreyard or heads of coal derricks, and ends set up to ballards or other conveniences in the gangway. Then the coaling begin either by means of tipping tubs or coal bags; the former, the designer of the plan estimates, should be of half a ton capacity, or, in the case of the latter, five bags to one hoist. The hauling lines are attached to the travelers and brought to either steam capstan or winches. Each collier has two whips in each quarter of her foreyard for hoisting and lowering away.

In the discussion which followed the description of the new plan, the general sentiment, as expressed, was of unbelief in its feasibility, the grizzled old sailors present insisting that it would be perilous to have a collier so close astern of their ships as was necessary for that; a heavy load swinging on a line between the two ships would tend to bring the collier in collision with their stern posts and rudders.

It is not unlikely that this vexed and vexing question of getting fuel at sea may be settled in the near future by the adoption of oil for fuel. Then the problem will be an easy one, for, even in rough weather, a steam vessel loaded with oil can safely come near enough to leeward of another steamer to take aboard a slack hose pipe, whence oil may be pumped into the empty tanks of war steamers.

Clean Castings.

Industries says: A Dusseldorf firm has recently introduced a device for separating the light impurities from molten iron or other metals in the operation of casting, with a view to securing pure and clean castings. The "separator" is placed upon the inlet aperture of the moulding box, and consists of a rectangular casing provided with a number of transverse partitions, dividing the casing into a series of separate chambers, which are in communication by means of openings at the bottom of the partitions. The molten metal, being poured into the separator at one end, is caused to pass through the several compartments in the apparatus before it can enter the moulding box, the light impurities being in this way caused to rise to the surface, and prevented from entering the mould with the metal. As the metal passes from compartment to compartment, more and more of the impurities are separated out, until the metal reaches the inlet to the mould in a practically pure state. Air is also effectually prevented from entering the mould together with the metal. In the second chamber there is arranged near the inlet a round iron rod, which produces ebullition of the metal, causing the impurities to rise to the surface. It is stated that by the use of this apparatus exceedingly dense and pure castings may be produced.

Two new vegetable perfumes are said to have lately become articles of commerce. One of these is a kind of *xylopia* from the province of Chirigui, in Costa Rica. The odor closely resembles that of *Canaga odorata*, and the flowers are now used, like those of that plant, in the manufacture of ylang-ylang. The other is named *ouco*, and is the highly odoriferous blossom of a kind of acacia tree which is found in Central Africa, and which Serpa Pinto was the first to describe. The *ouco* flowers are brought down the Cubangin River for sale. They cover the trees on which they grow with such profusion that they fill the atmosphere with the overpowering richness of their scent.