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USEFUL RECEIPTS.

Starch from Horse Chestnut and Arrow Root.

Hedenus and Flaudin have proposed the production of starch from horse chestnut, which amongst other amylaceous and albuminous substances is said to contain 25 per cent. of this substance. The bitter principle in the chestnut can be removed by alkali, and the following process is said to afford a product, which cannot be chemically distinguished from starch obtained from other sources. The chesnuts are thrown into boiling water, skinned and grated; the grated mass is then well mixed and kneaded with soda (1 lb. to 100 lbs. of the pulp,) and the starch subsequently obtained from it by washing in the ordinary manner. Water alone is said to remove the bitter principle, but a sharp taste then remains attached to the starch, which can only be removed by alkali.

The snow-white powder known as arrow-root, and at one time most erroneously considered the very essence of nutrition, and particularly recommended as food for infants, is a very pure kind of starch prepared in the West Indies, particularly in Jamaica, from the root of the "Maranthaarundinacea" and "Indica," plants belonging to the family of the "Scitamineæ." The name was first applied to the root from its supposed efficacy in curing wounds. The starch is contained in the joints of the rhizome, or underground stem, being deposited in a number of very minute cells.

The following account of the mode of preparing this arrow-root is given by Pereira:—

"The starch or fecula is extracted from the roots (tubers) when these are about ten or twelve months old. The process is entirely a mechanical one, and is performed either by hand or machine."

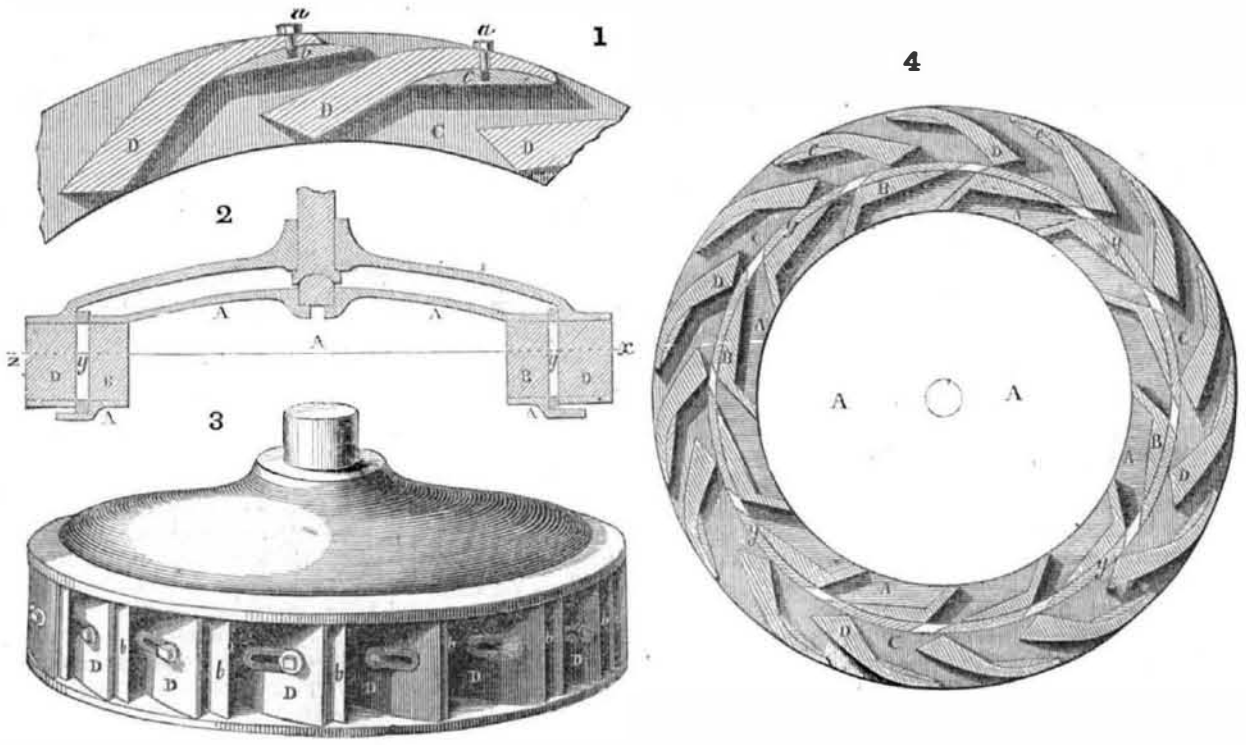
In Jamaica it is procured as follows:—The tubers are dug up, well washed with water, and then beaten in large deep wooden mortars to a pulp. This is thrown into a large tub of clean water. The whole is then well stirred, and the fibrous part then wrung out by the hands and thrown away. The milky liquor being passed through a hair sieve or coarse cloth, is suffered to settle, and the clear water is drained off. At the bottom of the vessel is a white mass, which is again mixed with clean water and drained; lastly, the mass is dried on sheets in the sun, and is pure starch.

In Bermuda the roots are first deprived of their paper-like scales, and then rasped by a kind of wheel rasp, and the fecula well washed through sieves and carefully dried.

Bleeding from the Nose.

To prevent the above there are several methods, viz., applying alcohol steeped in lint, which is a most energetic styptic, or by inserting carded cotton wool rolled up, which should be put into the nostril until it is well filled. It must not, however, be too tightly rolled, or the blood cannot penetrate the interstices, nor too loosely, or it will do so too easily, and the hemorrhage will continue.

JAGGER'S PATENT TURBINE WHEEL.



The annexed engravings are views of an improvement in the French turbine water wheel, invented by Ira Jagger, of the city of Albany, N. Y., and for which a patent was granted on the 19th of last October (1852.) Figure 1 is an enlarged view of a part of the periphery of the wheel with some buckets; figure 2 is a profile section through the centre; figure 3 is a perspective view of the wheel as set in its proper position, and figure 4 is a plan or horizontal section taken through *x y*.—A being the fixed part or shute chamber, with the shutes, B B, and C the wheel with its adjustable buckets, the same letters refer to like parts. The improvement consists in a sliding gauge or lip secured to the extremity of each bucket, as shown at *a b c*, in the figures, for the extension of the bucket, and fitted to the concave surface of the interior of it, by means of which the orifice of discharge, and its direction is regulated according to the head, under which the wheel works, and the amount of work to be done, and thus obtain the maximum effect with every varying head of water, also adapting the wheel to the work to be done, which in many cases varies a great deal. The lip is a rectangular plate of iron reaching from the top to the bottom of the bucket; its back surface next the bucket is curved so as to fit the curved surface of the bucket, its front surface being flat, and a chord to the curve of the back surface. This lip is secured in its place by a screw bolt, *a*, sliding through a slot in the bucket, and tapped into a lip and is regulated by sliding the said lip to or from the bucket directly in front of it, so as to diminish or increase the space between it and that bucket as shown in figures 1 and 3, where the lip, *b* is shown as nearly closing the exit passage, and the lip, *c*, as leaving the space between the buckets entirely open. A gate is placed between the shute chamber and the wheel, by which to regulate the supply of water to the wheel, so that there may be a due proportion between the quantity of water pressing into the wheel and that flowing out. There is also a movable cylindrical metal ring fitting accurately and occupying the centre space between the outside of the shute chamber and the inner periphery of the wheel as shown in figures 2 and 4, at *y*. It is pierced with slots equal in size and corresponding in form to the external openings of the shutes, and has the edges of the slots bevelled so as to deliver the water with as little interruption as possible, in whatever situation they may be in reference to the openings in the shutes. The ring is moved or shifted round horizontally, so as to close to a greater or less degree, the openings of the shutes, by any mechanical device.

A very important object is claimed and obtained in this patent, viz., the adjustable lip sliding on the inner face of the buckets to regulate the openings between the outer edges of the buckets, and thereby the flow of water from the wheel, thus adapting the lines of this turbine to the head of water and amount of work to be done, however varying these may be. The water is taken in at the bottom of the wheel and every inch of head is made available. In some situations at different times of the year, the head and quantity of water vary greatly; this wheel is specially adapted for such places. The wheel is simple, strong and durable, and not liable to be obstructed by ice. The inventor is of the firm of Jagger, Treadwell, & Perry, Eagle Foundry, Beaver street, Albany, N. Y., where good castings can always be assured, and from whom more information can be obtained by letter or otherwise. We would state here that we have seen some *unsolicited* letters from respectable persons who have been using this improved wheel, who speak in terms of the highest praise respecting its performances.

Inter-Oceanic Canal.

C. Trautwine, Civil Engineer, and author of some excellent books on engineering, who has just returned from exploring a canal route from the Atlantic to the Pacific Ocean, by way of the rivers Atrato and San Juan, in New Grenada, South America, reports that the canal mentioned by Humboldt, as having been executed a long time since, by a native priest, really never existed. Canoes are, even at the present day dragged across the intervening isthmus between the two rivers, but no water communication has ever been effected. Mr. Trautwine also speaks unfavorably of the route by the river Napipi. He, however, represents all the region to the east and south of the Atrato as abounding in gold, which is washed by the natives from the sands of all the streams which flow into the Atrato, from the east; and expresses his belief that the gold veins of the Cordillera mountains, in which those streams have their rise, are fully as rich as those of California. The geological features of the mountains of both regions, he says, are similar. The gold placers, or washings, are not confined to the beds of streams, but, according to Mr. Trautwine's representations, it is only necessary to remove an upper stratum of vegetable earth, in order to arrive at the gold bearing gravel over the whole country.

Receipt for Joining Glass.

Melt a little isinglass in spirits of wine, and add a small quantity of water. Warm the mixture gently over a moderate fire. When mixed by thoroughly melting, it will form glue perfectly transparent, and which will reunite broken glass so nicely and firmly that the joining will scarcely be perceptible to the most critical eye. Lime mixed with the white of egg forms a very strong cement for glass, porcelain, &c., but it must be done neatly, as, when hard, the superfluous part cannot easily be smoothed down or taken off.

California Statistics.

California contains four hundred thousand square miles. This would give eight States as large as New York State, fifty as large as New Jersey, and fifty-seven as large as Massachusetts. With a population per square mile equal to that of New Jersey, California would support eight millions of inhabitants; and if equal to New York twenty millions; and if equal to Massachusetts, forty millions, or fifteen millions more than the present population of the entire United States.

Iron Pavements.

The experiment of using iron pavement is being tried at Boston. The blocks are twelve inches in diameter, eight inches deep, one inch thick, of cast iron, cylindrical in form, hollow, and divided into cells which will be filled with gravel. The blocks are so made that when properly laid the edges overlap in such a manner, as to keep the whole firmly set.—This paving is being laid merely as an experiment, for the purpose of seeing what effect the frost will have upon it.

The irritating grain of sand which, by accident or incaution, has got within the shell of the oyster, incites the living animal to secrete from his own resources the means of coating the intrusive substance and thus germinates the pearl.