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### Bottomless Pit in the Mammoth Cave.

The bottomless pit in the Mammoth Cave of Kentucky is suspected by many to run through the whole diameter of the earth. The branch terminates in it, and the explorer suddenly finds himself brought upon its brink, standing upon a projecting platform, surrounded on three sides by darkness and terror, a gulf on the right and a gulf on the left, and before him what seems an interminable void. He looks aloft, but no eye has yet reached the top of the great over-arching dome; nothing is there seen but the flashing of the water dropping from above, smiling as it shoots by in the unwonted gleam of the lamp. He looks below, and nothing there meets his glance save darkness as thick as lampblack, but he hears a wild, mournful melody of water, and the wailing of the brook for the green and sunny channel left in the upper world never more to be revisited. Down goes a rock, tumbled over the cliff by the guide, who is of the opinion that folks come here to see and hear, not to muse and be melancholy. There it goes—crash! it has reached the bottom. No—hark, it strikes again; once more and again, still falling. Will it never stop? One's hair begins to bristle as he hears the sound repeated; growing less and less until the ear can follow it no longer. Certainly, if the pit of Frederick shall be eleven thousand feet deep, the bottomless pit of the Mammoth Cave must be its equal.—[Phila. Ledger.

[Has no scientific effort been made to plumb this deep gulf? A set of experiments for determining its depth and varying temperature, according to its depth, would be a matter of great interest to men of science.

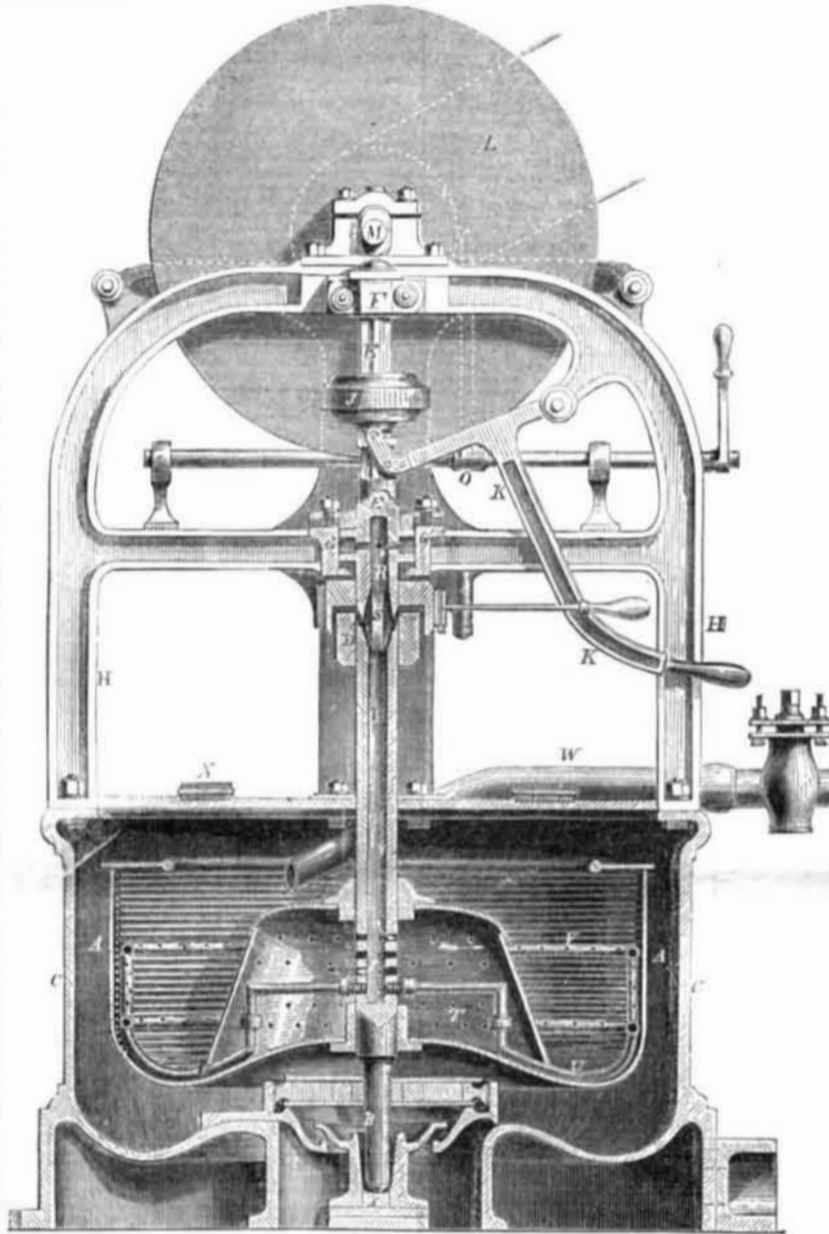
### California Horse Chestnuts.

E. Hughes, of Santa Clara, California, informs us that horse chestnuts are very abundant in that county, and they possess some peculiar properties. They are of the dwarf kind—not exceeding fifteen feet in height. They yield a great abundance of nuts which afford food for numerous ground squirrels, and while in blossom they yield the finest perfume of all the trees in California. He is preserving some of the nuts to send them to friends in the Atlantic States. They will be a beautiful acquisition to our gardens, parks, and pleasure-grounds. The husk of this chestnut makes a lather with soft water, like that of soap, and the inner bark of the tree possesses the same properties. It is therefore a useful as well as a very beautiful tree.

### Rhode Island Coal for Gas Manufacture.

The Springfield Republican learns that the Chicopee Gas Company, after careful experiments, have decided to substitute for the Pennsylvania and Cannel coals, a new bituminous coal recently found in Cranston, R. I. "This coal," says the Republican, "has illuminating qualities equalled by no other variety, and the Company are better satisfied to receive 2 3-4 mills per foot for its gas than 4 mills for the gas as made at present, while at the same time the light furnished will be of a better quality—two very desirable results. The substitution will be made after the first of January, 1857."

## COTTON BLEACHING MACHINE.



The accompanying figure is a vertical section of a peculiar application of the centrifugal drying machine to the bleaching of cotton cloth and such-like fabrics, and it may be the means of entirely revolutionizing the present processes of bleaching pursued in bleach-works and calico print-works.

The centrifugal apparatus ordinarily consists of a chamber of some permeable material, mounted upon a vertical spindle. Steam or heated water is passed into the chamber through a tubular shaft, so as to mingle with the goods, and the chemical ingredients employed in the process. The steam, supplied to aid the operations is conveyed into the chamber, by preference, through the tubular shaft, but it may be admitted from the outside, and directed against the rotating permeable wall of the chamber. An apparatus of this kind may obviously be arranged to operate with great effect upon textile fabrics and materials, as the bleaching and cleansing ingredients and the steam may be passed most rapidly and forcibly amongst and through the goods in the rotating chamber by the centrifugal force due to the rapid rotary action of the chamber. As the ingredients and fluid matters are thrown off and through the sides of the chamber, they are returned again and again to the goods until the desired effect is produced. The centrifugal apparatus, applied in this way, may rotate either upon a vertical spindle or upon a spindle more or less inclined to the vertical line.

The apparatus resembles, in its general construction, the machine known as the "hydro-

extractor," for drying goods by the application of centrifugal force. It consists of a cylindrical casing or receptacle, A, mounted upon a vertical spindle or shaft, B, and placed inside a cylindrical chamber or vessel, C. The casing or receptacle, A, consists of wire-work attached to metal ribs and framing, and is permeable for the passage through it of fluids. The shaft, B, is connected by a coupling, D, to a short shaft, E, above, and in a line with it and carried in upper and lower collar bearings, F G, upon the arched frame standard, H, bolted down upon the vessel, C. The coupling, D, is introduced to allow of a limited degree of angular movement in the shaft, B, the footstep bearing, I, of which is made movable for the same purpose. The shaft, E, carries a friction pulley, J, capable of moving vertically upon it, but fitted with groove and feather, being lifted up or down, as required, by means of a forked lever, K. The circumferential surface of the pulley, J, is in contact with the surface of a large disk, L, by which it is driven, this disk being fast on a short horizontal shaft, carried in bearings upon the framing standards, H. This shaft carries fast and loose pulleys, as shown by dotted lines, to receive a driving strap from an over-head shaft, the strap being shifted by means of the forked bell-crank lever, O. A bracket is bolted to the back of the framing to receive a spindle, by means of which the shaft, M, is pressed forward, so as to hold the disk, L, in close driving contact with the pulley, J. This pulley is made movable on its shaft, E, in order to vary the speed of the

casing or receptacle, the speed being reduced or increased accordingly as the pulley, J, is shifted nearer to or further from the center of the disk, L. These parts are common to the ordinary hydro-extractors; but the manner in which the apparatus is arranged for carrying out the present invention is as follows:—The lower portion of the shaft, E, is made hollow, and the lower bearing, G, takes the form of a hollow stuffing-box joint, communicating with the pipe, R, the shaft, E, being formed with apertures communicating with the hollow stuffing-box joint. The shaft, B, is likewise made hollow, and a metallic thimble or a flexible coupling piece, S, is inserted at the coupling, D. The lower portion of the shaft, B, is formed with apertures for the egress of fluids from the central passage. The steam or other fluid introduced by the pipe, R, and through the tubular shaft, B, issues from the latter into a space enclosed by a perforated casing, T, and within the receptacle, A, and from this casing it issues amongst the goods or other articles to be operated upon. Branch pipes, U, are also fitted to the tubular shaft, B, to convey the steam or other fluid to perforated pipes, V, encircling the receptacle. By these means the steam or whatever fluid is introduced into the apparatus, is made to pass in amongst and through the goods or articles being operated upon. Arrangements are also made for introducing water or other liquids, or even steam, into the receptacle, A, by means of a pipe, W, the mouth of which is curved down into the open space in the receptacle. A cover, X, is formed with a hinged door for the introduction and removal of the goods. The liquids which are passed into the receptacle, A, amongst the goods find their way through the permeable sides thereof, being forced through by the centrifugal force induced by the rapid rotary motion communicated to the receptacle. These liquids are caught by the vessel, C, whence they are drawn off by a passage at the right hand side, at the bottom, and they may be passed through the apparatus, and through the goods over and over again, being re-introduced into the apparatus by either or both of the pipes, R W. When the goods are sufficiently acted upon by the steam and liquids, they may be dried before removal from the machine by discontinuing the introduction of steam or liquids, and keeping up the rotation of the apparatus, until the centrifugal action carries off all the moisture out of the goods, as in an ordinary hydro-extractor.

The patentee is James Wallace, Jr., of Glasgow, Great Britain, who has obtained patents in England and the United States. His American patent was granted on the 30th September last; and the claim will be found on page 34, this volume SCIENTIFIC AMERICAN. The use of a dash wheel involving the same application of the bleaching liquor, (as shown in this figure,) to the cloth, is covered by the claim. The present plans of bleaching cotton cloth, generally practiced, require huge tanks containing the bleaching liquor, and involve tedious manipulations and severe labor. The method here illustrated, it is believed, will greatly shorten the process, and save an immense amount of labor.

### Clough's Polishes.

That indefatigable benefactor to all good housewives, I. S. Clough, Esq., of Philadelphia, Pa., has sent us samples of his liquid polish for furniture, and polish for stoves. The furniture polish is a superb article of the "first water," and that for stoves makes them shine with a luster equal to the polished heel of a genuine gentleman of color. Such polishes are polishes in deed, as well as word, and the gratitude of the community is due to such a caterer for the shining parts of domestic affairs.