

AN EAST INDIAN ORNAMENTAL SHRUB.

Our engraving represents a specimen of a beautiful genus of the sub-order *vacciniaceae*, or whortleberry family. The familiar huckleberries (three kinds) are of this tribe, and the cranberry, blueberry, and bilberry are nearly allied to it. Many species are exceedingly ornamental as greenhouse shrubs, our present subject (*epigynium leucobotrys*) being, according to the *English Garden*, the best adapted for this purpose. The foliage is very handsome, the leaves being of a bright glossy green; and the berries, which the plant produces in great profusion, are of an opalescent white color, dotted with black spots. The root of the shrub is very peculiar, being very similar in appearance to a tuber, such as a yam or a Chinese potato.

The *epigynium leucobotrys* has flourished well in the open air in the south of Ireland, standing the winter, which is very mild in that region, exceedingly well. The blossoms, regarded individually, are not especially attractive, but they are produced in abundance; and springing from the centers of the clusters of leaves at the ends of the last year's growth of wood, the intervening stems being quite bare, they give the shrub a singular and effective appearance. The blooms are short-lived, and set their fruit immediately, the berries coming to their full development early in September, and usually remaining on the shrub during that month.

Great Exhibition of Machinery in Manchester, England.

The preparations for the exhibition of machinery, fixed and in motion, at the Royal Pomona Palace, Manchester, in May next, are progressing in the most satisfactory manner; and no doubt, after the great success which attended the show of machinery in connection with the cattle show at the same place a few months ago, most of the principal manufacturers and exhibitors in the country will send entries. The amount of prizes offered exceeds \$5,000; and as it is intended to keep the exhibition open for a lengthened period, ample opportunity will be afforded for exhibitors to exhibit their productions and to attract buyers from all parts of the country. The immense demand which is daily made for improved machinery of all kinds in the manufactories of Lancashire makes Manchester essentially a headquarter where an exhibition of this nature cannot fail to attract attention, especially as the Lancashire manufacturers themselves are so keenly alive to competition from without. Already many entries have been sent in, principally from Lancashire, London, and Newcastle on Tyne, including machines for converting fibrous materials, such as cotton, wool, silk, hair, etc., into yarns, threads, or fabrics, and for printing and otherwise imparting designs to them, also machine tools and apparatus used in molding, casting, pressing, forging, engraving, and cutting metals or timber. The general machinery will embrace steam, hydraulic, and other engines, boilers, and apparatus for generating and transmitting motive power, tramway, engines, and carriages; letter press printing apparatus; machinery for melting, puddling, working, and rolling iron and steel; machinery for bleaching, finishing, dyeing, etc. The promoters of the exhibition, further, with the view to give the exhibition a thoroughly universal and practical character, have applied to the Board of Trade to grant provisional protection to any unpatented and novel invention, and their request has been acceded to. Unpatented and novel inventions may thus be provisionally protected, and persons of limited means may have the opportunity of being assisted in making their designs practicable through their being submitted to the test of thoroughly competent judges. The exhibition will be held in a brick building with a glass roof, covering an area of 40,000 square feet, and Mr. Keilly, the proprietor and one of the promoters of the exhibition, has undertaken to provide, at his own cost, steam boilers, main steam piping, and covering for the floor. The classification of machinery will, as far as practicable, be the same as was adopted at the Great Exhibitions of 1851 and 1862.—*Iron.*

Finding the Meridian.

Mr. George W. Blunt, of this city, who knows as much about nautical matters as any gentleman we know, gives the following simple mode for running a meridian line:

Take a piece of board, or any similar material, and describe on it a number of concentric circles. Place this in the sun; over the center hang a plummet. Observe the shortest shadow from the plummet; the sun will then be on the meridian; draw a line to the center of the circle, and that will be the true meridian line. This will do to mark the apparent time or to correct the compass for variation.

The Tock-Tay, or Large House Lizard.

A correspondent from Eastern Bengal, India, describes (in *Nature*) the lizard of that country.

"This noisy but harmless animal generally finds a lodgement in the bamboo and mat houses of the district that are anywhere near the jungle. It is also fond of living in hollow trees, which give great resonance to its loud and staccatoed cry of tock-tay. It is of a green tint, mottled over with red spots; and suckered feet, like its smaller congener, the tick-tickee, enable it to run under beams and bamboos. Its cry is, however, very different from the gentle tick-tick of the small lizard, being sufficient at night to awaken the soundest

sleepers. He begins with a loud rattle as if to call attention; this is followed by another and more imperative rattle; and when every body may be supposed to be listening, he strikes in deliberately with tock-tay—a moan—tock-tay—another moan—tock-tay—a last and final moan, with which he winds up, not to be heard again for an interval.

In the way of edibles he is fond of a good crust, and the common dung beetle frequently furnishes him with a *pièce de résistance*. That insensate insect becomes an easy prey, owing to his heedless rattledum-clash ways; he is the great extinguisher of lights at night in native houses, and Europeans are also familiar with his strong sustained drone, varied by intervals of silence when he has dashed against some rafter or projection, or given himself a heavy fall; but he is not to



THE EPIGYNIUM LEUCOBOTRYS.

be discouraged, and is soon droning about as dismally as ever.

The drone, however, is sometimes suddenly quenched without the consequent thump on the floor, and when this is followed by a cruching sound overhead one may safely infer that it is tock-tay who has been lying in wait for him and has snapped up his prey.

These lizards may easily be caught during the day by slipping a noose over their necks while they are asleep in an exposed position; and when so caught they snarl, growl, and snap at their captor in a very ferocious way. I have not heard, however, that they are venomous."

THE CUT-LEAVED BEGONIA.

This pretty little species, *begonia Richardsiana*, is an



native of Natal, and was introduced to England in 1871. In general habit and mode of flowering it bears considerable resemblance to the well known *b. Dregei*, from which, however, it differs, in having lacinated foliage. It forms an el-

egant decorative plant and grows freely in a moderately cool greenhouse, forming bushy little specimens covered with multitudes of snow-white crystalline flowers. Like all the tuberous-rooted species of the genus, it is readily propagated by division; and if grown near the light, these divisions soon form flowering plants. A compost of turfy loam, leaf mold, and coarse sand suits it admirably, and, like most other members of the genus, it requires an abundant supply of root moisture when growing. Plants of this desirable little species have already found their way into European markets, and it well deserves cultivation as one of the prettiest plants in the whole group.

New Process for Preserving Wood from Fire and Decay.

The following process is by S. W. Moore and Weatherby, of England:

The wood to be prepared is first kiln-dried, which process deprives it of all moisture and much of its volatile turpentine and other inflammable matter; it is then put into suitable cylinders, in which lime and water, with sulphurous acid gas, are forced into the pores of the wood under considerable pressure, the sulphurous acid being a by-product from the wasting of pyrites.

The wood is removed and dried, and is then ready for use.

When sulphurous acid is passed into lime under pressure, a sulphate of lime is formed which is soluble in water, capable of crystallizing as a bisulphite, which is readily oxidizable and convertible into sulphate of lime or gypsum.

As this is an exceedingly insoluble salt, it is not easily removed, therefore, from the pores of the wood, and not only protects the wood by its presence as a non-conductor of heat, but deoxidizes all matters which are likely to prove objectionable as ferments.

The advantages presented by this wood are that its weight is less after treatment than of the same wood before kiln-drying; a series of pieces gave a mean specific gravity of 0.3501. The process for working is very much cheaper than that of any other yet devised; it is an admirable means for preventing dry rot and decay from the action of water, as the pores are coated with an insoluble salt; it thus wears longer and vibrates less than ordinary pine; it resists the attacks of insects, and, from the removal of the volatile inflammable matter, as well as from the introduction of a non-conducting material, it is well able to withstand fire, the interior parts not giving up gaseous matter, which always so readily inflames.

The wood, although answering these ends, contains but little matter foreign to itself. Wood fiber, 87.2; moisture at 239° Fah., 8.5; ash, 4.3. Total 100.

The idea here presented is much the same as that noticed accidentally in the late Franco-Prussian war; many houses there were found to have been protected from fire when they were largely built with plaster; lath and plaster walls were absolutely uninjured by the fire when surrounding parts were destroyed.

Portland Cement.

Portland cement, says Mr. H. Faija, of London, consists of carbonate of lime mixed with silica, iron, and alumina, and is made by mixing chalk with mud obtained from the banks of the Thames and Medway, in the proportion of about four of chalk to one of mud; in some cases gault clay is used instead of mud. The materials are mixed in wash mills, and the result, called slurry, is run into large reservoirs or backs, and allowed to settle; it is then dried and calcined at a high temperature, and afterwards ground between millstones to the requisite fineness. The wash mill is a large, shallow, circular pan built of brick, into which the barrow loads of chalk and mud or clay are tipped; and a supply of water being added, the whole is stirred and thoroughly mixed by a set of revolving arms carried upon a central vertical shaft.

The liquid material flowing from the wash mill is raised by an elevator or pump, and delivered into a reservoir, in which it is allowed to settle; the water is then drawn off by a sluice, and the reservoir refilled from the wash mill. This process is repeated until the reservoir is full of the deposit or slurry, which is then dug out and laid on a drying floor of fireclay tiles or iron plates, heated by flues underneath, and covered with a light roof. The dried slurry is taken to the kilns to be burned, being charged into them with alternate layers of coke; when sufficiently burned, the clinker is allowed to cool, and is then drawn out at the bottom of the kiln, and taken to the crushing rollers, by which it is broken up into small pieces preparatory to being ground by the millstones. Having passed through the millstones, the cement is laid out on the warehouse floor and allowed to cool, being occasionally turned over; this mixes the different days' work, and gives uniformity to the cement produced, and also allows any particles of lime still unslaked to slake by exposure to the air. In color, Portland cement should be of a dull bluish gray, and should have a clear, sharp, almost floury feel in the hand; it should weigh from 112 to 118 lbs. per struck bushel, and, when molded into a briquette or small testing block, and soaked in water for seven days, should be capable of resisting a tensile strain of from 300 to 400 lbs. per square inch. The cement should, during the process of setting, show neither expansion nor contraction.