GROWING ORCHIDS.

The orchids are among the most recent popular claimants for the attention of the florist and the amateur, and there are some varieties which can be raised with very little trouble and expense, as a large proportion of the entire class require but a moderate degree of heat. The species are very numerous, and are found all over the world, this country being, however, but sparingly represented among them. The best known of the American kinds is probably the showy orchid (*orchis spectabilis*, of Linnæus); this is found from New England to Kentucky, and beautifies the wooded hills in the month of May. The large, round-leaved orchid (*platanthera orbiculata*) spreads its foliage on the ground, and the white orchis (*p. dilatata*) bears a wand-like spike of whitish flowers. Both these kinds are common in our Northern States. Perhaps, however, the most beautiful of our native sorts is the great purple orchis (*p. peramœna*, Gray), with its large, showy flowers. It grows freely in moist spots in the West and South.

As a rule, all orchids require plenty of moisture, and the beautiful English specimen shown in our engraving is elevated in a bed surrounded by spars of wood, serving to keep the roots well supplied with air, and to surround them in a water-bearing mass of moss or other vehicle.

New Form of Concrete Foundations.

At Glasgow harbor, the foundations for a 60 tun crane have been put down on a new principle by Mr. Deas, engineer to the Glasgow Harbor and Clyde Navigation.

The quay wall itself is carried on triple groups of 12 feet cylinders. The crane seat rests on twelve concrete cylinders, 2 feet 4 inches thick and 12 feet external diameter, in three rows of four each. The four front cylinders were made in pairs, and the middle and the back rows singly, the last two rows being joined together by tongues of brickwork. The cylinders were made in wooden frames, in rings about 30 inches deep. They are composed of a mixture of five of gravel to one of Portland cement, and were ready to lift and set in position after being made about three weeks.

The cylinders sit each on a cast iron shoe, on which, after being set in the trench, brickwork in cement was built to a hight of 5 feet. On the top of this the concrete rings were placed, and jointed together with strong Portland cement mortar. The bottom of the trench in which the shoes were placed close together was about 3 feet above low water level. After the building of the cylinders on the shoes was completed, they were sunk, by means of Milroy's patent excavators, until the bottom of the shoes reached the depth of 32 feet below low water level, or about 52 feet below quay level, about 100 tuns of cast iron rings, of the same shape as the concrete rings, being required to force each cylinder down. The cylinders were then cleaned out by the excavators to the level of the bottoms of the shoes, and filled with Portland cement concrete, the lower 9 feet of the front cylinders being composed of five of gravel to one of cement, all the other concrete used in filling being nine to one. The diamond spaces between the cylinders were also cleaned out to the same level, and filled to the top of their cylinders with concrete, five to one.

THE SOLANUM CRINITUM.

This is one of the handsomest of all the plants known as sub-tropical, when grown in warm sheltered spots. According to the *Revue Horticole*, this plant was introduced to Paris gardens in the year 1862, and is a native of Guiana. It is, in addition to its fine size and dignified port, a plant of remarkable beauty, owing to the texture of its leaves, which are covered with a deep rich velvet of tender green color, with violet veinings set with spines. So very remarkable a plant deserves to be cultivated as an indoor plant where the climate will not permit of its being grown out of doors.

SOLANUM CRINITUM.

Panoramic Photographs.

M. J. F. Plucker, of the Belgian Photographic Association, contributes to the *Bulletin* an ingenious method of producing panoramic prints from two or more negatives. The negative must be taken so as to include, at the edges where the junction is to be made, a portion of the subject in common This portion is printed from one of the negatives upon a slip of paper, which is divided in the center with a penknife. The two halves are then attached to the negatives in such a manner as to exactly cover the portion it is intended to "stop out" of each, a piece of opaque paper, the size of the negatives used, being also gummed on for the purpose of protecting the sensitive paper, which is not covered by the negative. The first negative is placed in a printing frame large enough to hold the number of negatives intended to be combined, and, after printing, the extremities of the line of junction are carefully marked with a pin point. Negative No. 2 is then introduced and brought into register with the pin holes. This may be done either by holding the frame up to the light, or by resting it on the edge of a table, a lamp being placed on the floor. Having secured the register, proceed to print in the usual way, repeating the operation for each different negative.

Magnetization of Steel.

The magnetic strata are limited to a certain thickness, which they can never exceed. This limit varies in different steels. It is very great in those which are soft, and diminishes as the proportion of carbon augments and as the temper is harder. For certain bars which the author has studied it is=0*m* 4; but he has specimens where it is below 1-10 m.m. The latter only receive what might be called a superficial magnetic coating, the thickness of which it is not possible to augment by increasing the intensity of the current. But if the depth of the magnetization diminishes along with the magnetic conductibility, the intensity of the magnetism increases. It follows that the quantity of magnetism is subject to two causes of inverse variation—the depth which increases, and the intensity which lessens, as the conductivity increases.—*M. J. Jamin.*

Everlasting Perdition.

A reward of two hundred and fifty dollars is offered in London, for the best essay of moderate phamphlet size, advocating an address by the House of Commons to the Queen, in favor of the revision of the services of the State Church, so as to exclude the threat of Everlasting Perdition against those of Her Majesty's subjects who do not believe in that doctrine. Essays are to be sent in before May 1st of the present year addressed to Rev. R. Spears, 37 Norfolk street, Strand London.

Uses and Properties of Salicylic Acid.

Salicylic acid is prepared from the oil of wintergreen, the latter obtained from the *gualtheria procumbens*, a trailing plant common all over this country and widely known as the wintergreen, tea berry, partridge berry, and deer berry, by boiling the oil for a few minutes with a solution of caustic potash: in this operation wood spirit is liberated, and on the addition of an acid salicylic acid is precipitated. Thus obtained, the cost of the substance has been high. Although its existence has been familiar to chemists, through its little or no utilization, it, in common with a very large number of other organic compounds, has been but slightly known outside of the laboratories. At the present time, however, there is a prospect of the acid coming into wide general employment through the recent discovery, of M. Kolbe, Professor of Chemistry at the Leipsic University, that it can be fabricated from carbolic acid, which discovery has been already put in practice on a large scale by M. Van Heyden of Dresden.

M. Kolbe has found that, while salicylic acid can be produced from carbolic acid, it, on decomposition by heat, regenerates the latter, and, further, it partakes, in common with carbolic acid, of the power of killing the inferior organisms which determine the phenomena of fermentation and of putrefaction.

Salicylic acid is in fact a powerful antiseptic, and, from its harmlessness and freedom from odor and taste, appears to be more valuable, in a considerable degree, than carbolic acid. Its properties are well shown in the following brief summary of M. Kolbe's experiments: Beer yeast, which, as is well known, determines the alcoholic fermentation of sugar, is totally inert on a solution of glucose to which one one-thousandth part of salicylic acid has been added. Ground mustard, when treated with tepid water, yields a strong piquant odor of mustard, but becomes completely odorless if a small portion of the acid be previously added. The acid also hinders emulsin, or the ferment of sweet almonds, from acting on the amygdalin and transforming it into essence of bitter almonds.

A very small quantity of salicylic acid retards considerably the spontaneous coagulation of milk. A quart of beer containing 15·4 grains of the acid and exposed to the air does not become sour, nor does the least vestige of the cryptogamic vegetation peculiar to spoiled beer show itself. Eggs plunged for one hour in a solution of the acid, and in no manner treated otherwise, were found perfectly fresh after three months' exposure to the atmosphere. Meat powdered over with the substance is prevented from spoiling for weeks. To prepare for use, the meat is merely washed to disengage the acid, as the savor of the latter is very slight and by no means disagreeable. This is a remarkably valuable property, and one which will doubtless find profitable utilization in transporting beef from Texas to the Northern States, or from Australia and South America to Europe.

Dr. Thiersch, of Leipsic, has investigated the uses of salicylic acid as applied to surgical dressings. When placed upon cancerous sores and ulcers in a powdered state, it hinders the putrid odor and produces no inflammatory symptoms. The impregnation of tow dressings and of bandages with the substance is found to be attended with excellent results, though it is curious here to remark that the acid is absorbed and afterwards found in the urine. The application of the acid to treating contagious maladies, such as typhoid and cholera, has as yet not been made the subject of experiment; but now that the properties of the substance have brought it prominently before the scientific world, there is little doubt but that the most extended investigations into them will shortly follow. It is already in use in the surgical wards of Roosevelt Hospital in this city, as a dressing for wounds, ulcers, etc., in the proportion of one drachm to sixty-two and a half fluid ounces of water.

Apparatine.

This is a new substance said to give excellent results when employed for preventing incrustation in boilers, besides being useful where gelatin and gelatin-like substances are required. It was discovered by Mr. H. Gerard. It is a colorless and transparent material obtained by treating starch, fecula, farina, and any other amylaceous substances with a caustic alkali. Hitherto it has been found to be best made with potato starch, treated with a ley of caustic potash or soda, the following being the most suitable proportions, and best method of preparing the apparatine: 15 parts potato starch are put into 76 parts water, and kept in a state of suspension by stirring, when 8 parts potash or soda ley at 26° Baumé are to be added, and the whole thoroughly mixed. In a few seconds the mixture suddenly clears, and forms a thick jelly, which is then beaten up vigorously, and the longer the operation is continued the better the quality of the apparatine. It is in this state a colorless, transparent substance, slightly alkaline to the taste, but devoid of smell, and of a stringy, glue-like consistence. 11