A CAUCASIAN WILD GERANIUM.

There are many geraniums, at present confined almost exclusively to botanic gardens, which, says *The Garden*, might be advantageously grown as ornamental plants in ordinary garden establishments; and among these, one of the most effective is that of which the accompanying engraving is an illustration. It is a beautiful Caucasian variety, named *g. platypetalum*. It grows wild in the Talish mountains, and is closely related to *g. sylvaticum*, from which, however, it only requires a superficial examination to distinguish it. It is of a stronger growth than that kind, and its flowers, which in color resemble those of *g. pratense*, attain, as will be seen by the engraving, which represents them in their natural size, much larger dimensions. This charming geranium is more especially valuable, both in large and small gardens, inasmuch as it is easily increased, both by division of the stem and by means of seed. In addition to this it is extremely hardy, and thrives in almost every kind of soil. It is, as will be seen, covered with soft, spreading hairs. The stem is erect and angular; the stipules broad; the leaves heart shaped and denticulated, and having from five to seven oboval obtuse lobes; the peduncles, which carry from two to three flowers, are covered with glandulous hairs, as also is the calyx, which has awn-like sepals. The petals, which attain double the length of the sepals, are two or three lobed; the stamens and carpels are slightly hairy, and the seeds glossy. The flowers, which are pendent previous to opening, remain erect during the time they are in bloom, a period lasting from May until July. Among all kinds of geraniums, *g. platypetalum* is one of the best for growing in clumps, in which it produces, when in full bloom, a striking effect, its flowers being large and produced in great abundance. It is a remarkably fine variety, and should always be cultivated where it is possible.

GERANIUM PLATYPETALUM.

Washing Flannels and Linens.

To whiten flannel, made yellow by age, dissolve 1½ lbs. of white soap in 50 lbs., soft water, and also ⅔ oz. spirits of ammonia. Immerse the flannel, stir well around for a short time, and wash in pure water. When black or navy blue linens are washed, soap should not be used. Take instead two potatoes grated into tepid soft water (after having them washed and peeled), into which a teaspoonful of ammonia has been put. Wash the linens with this, and rinse them in cold blue water. They will need no starch, and should be dried and ironed on the wrong side. An infusion of hay will keep the natural color in buff linens, and an infusion of bran will do the same for brown linens and prints.

THE EXTERMINATION OF THE PHYLLOXERA BY ALKALINE SULPHO-CARBONATES.

The sulpho-carbonates discovered by M. Dumas to be a specific against the ravages of the phylloxera, the parasitic insect which at one time bid fair to desolate all the vineyards of France, are formed by the combination of a mono-sulphide with the sulphide of carbon. In order to prepare them, the mono sulphide is dissolved in water or alcohol. To this solution the sulphide is added, and the whole is agitated, generating the sulpho-carbonates. Previous to their general application to vines, these substances were merely laboratory products, but recently in France they have been made industrially in large quantities and at low cost.

The alkaline sulpho-carbonates (potassium and sodium) are in the state of a dry salt, deliquescent and of a fine reddish yellow color; but it is often difficult to obtain them in that condition. More frequently they are to be had in a liquid state of solution, more or less concentrated, and marking from 33° to 40° B. The sulpho-carbonate of barium, on the contrary, is obtainable solid, and in the state of a yellow powder, sparingly soluble in water.

The useful application of the alkaline sulpho-carbonates to the cure of attacked vines requires, 1st, that all the infested surface may be treated; 2d, that the toxic action may be carried sufficiently deep in order to reach all the phylloxeras. These two conditions combine for the complete destruction of the parasite. It is necessary, moreover, that the remedy should act in the most economical manner. The best means of obtaining a perfect diffusion of the poison in the soil consists in the use of water as a vehicle. The quantity of water employed may depend upon the degree of humidity of the earth and upon expected rains; but the use of some water is necessary. From experiments conducted at Cognac, in France, and many times repeated throughout that country, it appears that, to apply the sulpho-carbonate solution, square excavations should be made in the soil, about 3 inches deep and 30 inches wide. As all the infested locality must be treated, these holes should be made sufficiently near together that the earth partitions between them shall become soaked after the liquid is poured in. The bottom of the excavation, it is hardly necessary to state, should be horizontal, so as to afford the best opportunity for the solution to infiltrate uniformly into the earth; and this should be borne in mind when the natural level is inclined. The holes should be brought up close to the base of the vine treated. The above done, about 2⅞ ounces of the sulpho-carbonate, at 40° B., is mingled with any quantity of water, in the ordinary watering pot or other vessel, thoroughly mixed, and the whole poured into one hole. Repeat this for every hole made, the area covered by the whole number of excavations of course being that under run by the roots of the vine. Then return the earth about the base of the vine and pour on plenty of fresh water, so that the poison will be forced deep down to all the roots. The annexed illustration, which we extract from *La Nature*, and which is copied from photographs, will give an idea of the effect of treatment with sulpho-carbonate of potassium. The two feet of vines shown formed part of a single attacked group, in which the parasite had existed for three years, and they had reached about the last stage of the disease. In March, 1875, one half of the selected group was treated with the chemical, the other left to its fate. In the treated portion, it should be noted that, out of 260 vines, 60 were already dead. Up to July the vegetation of the vines, without growing any weaker, had not improved; and it was not until the beginning of August that the leaves began to grow green and the shoots to elongate. Meanwhile, the vines not treated were daily perishing. In October, two average vines, one from each portion, were selected and reproduced, as stated, by photography, for the purpose of the present illustration. The vine on the left has very short branches, and its radicular system is almost destroyed; it may be considered, in fact, as dead. That on the right, which was in similar condition to the other before treatment, is evidently considerably improved, new shoots appearing and new roots being thrown out, so that it may be predicted that by next year it will have regained its former vigor.

EFFECT OF SULPHO-CARBONATES ON VINES.

The water necessary as a vehicle for the poison, in order to conduct it into the soil, is really a disadvantage; and besides, the most suitable season for the application of the sulpho-carbonates is during the rainiest period, when the earth is already soaked with water. Then, however, the quantity of water actually added as a solvent may be reduced to its minimum.

In order that the remedy may produce its best effect, there should be no delay in using it. Apply as soon as the disease becomes apparent. In the majority of cases, however, judging, as many will, from the harvest, few will have any fears of the malady during the first year of its existence; for it is now known that the plant, although strongly attacked, will still go on bearing; but during the second year, the disease will show its effects and require prompt treatment. Even then, however, if there be no further delay, the vines will not materially feel the ravages of the insect.

It is well to remember, in taking into consideration the cost of the chemical—and that, at present, is a rather indefinite matter—that the sulpho-carbonate of potassium is an excellent manure, and that it is quite probable that the excess of crop gained will largely repay the expense of treatment. It is reasonably certain that, in the sulpho-carbonates, the long sought remedy against the terrible vine disease has been discovered; but, on the other hand, with the exception of the facts above detailed, little is known or understood regarding its practical use, so that in that respect a promising field lies open for future investigators.

Radiant Heat as a Motor for Automata.

Among the many suggestions which have been advanced relative to the way in which automata may be caused to work without the aid of a confederate of the exhibitor hidden in the apparatus itself, some ideas offered by Professor Proctor, in an essay in his recently published "Science Byways," deserve credit for superior ingenuity.

He argues that, while it is possible that chess may be played by a machine, it is utterly impossible that cards can be, and hence an automaton like Psycho, supposing no person to be inside, is merely a curious deception. We have only to discover the trick which infallibly exists, and all is clear. One very plausible and novel way of performing the juggle, Professor Proctor finds in the invisible heat rays radiated from a concealed hot body. A metal globe filled with boiling water will retain sufficient heat to answer all the purposes of an exhibition of ordinary duration. This globe may be placed as near as possible to the automaton, of course out of sight of the spectators, and so arranged with reference to a concave mirror that its radiated heat rays are brought to a focus on the figure. A screen of blackened quartz, which would not obstruct the passage of the rays, might be used to hide the globe, or a lens of the same material might be employed to converge the rays, in lieu of the mirror. By a simple mechanical arrangement, a confederate located anywhere in sight of the exhibitor could so govern the mirror or lens that the focal point of the rays could be directed on any desired spot on a given surface of the automaton. The latter has before it thirteen cards, and its performance consists in lifting one of these cards at its proper turn during the game. This purely mechanical operation is not at all difficult to execute, since the movements are few and simple—involving only the turning of the body until the arm is in position to descend and seize the proper card. If thirteen buttons existed on the machine, by touching any one of which the apparatus would take a different position and then operate, the intervening devices (clockwork being the motor) could easily be imagined. The trick would be then to touch the button without detection, even under the closest scrutiny; and this is the operation which Professor Proctor proposes that the focussed heat rays shall perform. For buttons substitute thirteen thermo-electric batteries, any one of which will generate a current of electricity when heated even to a very small degree, and direct the heat rays on each at will. Then the one which the rays strike will, by its current, change a stop or otherwise affect the general mechanism, to make the figure take up the card to which that particular battery corresponds. Information is conveyed to the confederate, by any prearranged system of signals, from the exhibitor, who watches the game; and thus the automaton might be worked in a way to which even an examination of its interior would fail to give a certain clue.

Hanging Investigations.

Professor Haughton, of Dublin, has recently described some investigations undertaken by him with a view of discovering which was the most certain mode of death, the long drop or short drop in hanging. The results are that the most comfortable method of hanging is to be sure of a rope of sufficient elasticity, to place the knot under the chin with a running noose, and to drop about 10 feet.

THE *Medical Times* says that the test employed for selecting the men for the British Arctic Expedition consisted in making each candidate stand with his bare feet on a cube of ice. Those who endured the longest were chosen.