

kept free from weeds, and the soil should be carefully loosened after flowering-time. The part utilized is the stigma, which must be collected as soon as the flower is fully expanded: this occurs in Europe about the close of September or the commencement of October; in this colony it would doubtless occur from the latter part of February to the commencement of April. It requires about 6,000 flowers to produce a pound of fresh saffron; this loses four-fifths of its weight in drying. The preparation of the drug is extremely simple, and consists merely in drying the stigmas in wire sieves over a gentle fire, a process which does not require more than from fifteen to twenty minutes, when the saffron is ready for the market. Saffron has been cultivated in England for more than five hundred years: in the sixteenth century it formed an article of export, and was held in high repute on the Continent of Europe, where it realized a higher price than saffron from any other country. At the present time it is chiefly cultivated in Spain and France. In 1864 the saffron exported from Spain was valued at £190,000, but in 1866 it was only £47,000. In southern France saffron is chiefly cultivated by peasant-proprietors. In the Department of the Loiret the annual value of the crop is estimated at £60,000.

The declared value of the saffron imported into England in 1870 was £95,690, being at the rate of 43s. 6d. per pound. It is chiefly used for colouring medicines, confectionery, &c., and as a dye.

In this colony the yield for the first year could not be expected to realize a higher rate than £6 per acre; the third year it would be fully four times as much, and would continue to increase until the offsets covered the entire area under cultivation.

No. 34.

Paper by Mr. THOMAS KIRK on LOXA BARK or PERUVIAN BARK (*Cinchona officinalis*, *Cinchona calisaya*, *Cinchona succirubra*).

THIS is imported into Britain to the value of upwards of £290,000 per annum. It is received in three principal forms: 1. Flat bark. This is obtained from the trunk and primary branches, and is usually in large pieces from a quarter to three-quarters of an inch in thickness. 2. Large single or double quills, obtained from the smaller branches. This is usually in quills or tubes three-quarters of an inch to an inch and a half in diameter. 3. Small quills or pipings. This form is obtained from the branchlets, and is usually imported in tubes or quills from one-eighth to three-quarters of an inch in diameter. In many cases it is not thicker than a sheet of common writing-paper, and is rarely more than one-tenth or one-twelfth of an inch in thickness. All the forms become more or less broken in transit, but this does not detract from their efficacy.

The profitable cultivation of cinchona is based on the fact that the bark of shoots of two or three years' growth contains as large a proportion of alkaloids as the eldest trunk bark. In this colony, the area in which it could be profitably cultivated is restricted to the country north of the Waitemata: the most suitable places would be open fern-tree gullies, with a fair depth of good soil. The plants might be finally planted out at about 10 feet apart; the first crop of bark might be taken the fourth or fifth year after planting, according to growth, when the branches might be thinned out and peeled, the bark being dried in the sun as quills. The extent to which branches can be removed must depend upon the rate of growth. In all probability the more suitable method here will be to treat the plants in the same way as basket-willows, cutting back all branches to the stump, say every second or third year: in this case the plants may be set out 5 feet apart or even closer. It has been found that by covering the branches with a layer of moss the proportion of alkaloids is increased; and branches from which the bark has been partially removed make a new growth more speedily when treated in this way. The success of the Neilgherry plantations has been most striking. The first shipment of plants was made from Islay, Peru, in July, 1860. The first crop of bark was placed in the London market in August, 1867. In 1873, nearly a thousand acres had been planted on the Neilgherry Hills (South-west India), and at that time the oldest trees were over 30 feet high, with trunks more than 12 inches in diameter. In this colony, plants of *Cinchona succirubra* were propagated in the gardens of the Auckland Acclimatization Society previous to 1873; but I do not know what has become of them. All the species named at the head of this paper may be easily raised from seed, which can be obtained without difficulty.

No. 35.

A SHORT LIST of MEDICINAL PLANTS which may be profitably cultivated in New Zealand. By Mr. THOMAS KIRK.

THE following list of drug-yielding plants suitable for local cultivation makes no pretensions to completeness. It is merely an enumeration of a few kinds which in most cases can be easily procured, and which do not present any special difficulty to the cultivator. Some of them, as mustard and poppy, might take their place in a course of rotation-cropping, as their produce is required in large quantities, and they are of only annual duration. Others, as mint, may be grown in large quantities, but require permanent culture. Others, again, as aconite and podophyllum, are required in comparatively small quantities, and are therefore adapted for cultivation in cottage-gardens. The production of lactucarium at Zell, in Rhenish Prussia, shows what may be done in this simple way. An asterisk is prefixed to those species which have already been introduced into the colony:—

Medicinal Plants adapted for Cultivation in New Zealand.

Black hellebore, *Helleborus niger*—root.

Coptis root—root—*Coptis tecta* (China, India), *Coptis trifolia* (North America). The first is the more valuable.

* Aconite, *Aconitum napellus* (Europe)—root and leaves.

Nepal aconite, or Indian aconite, *Aconitum ferox* (Northern India).

Podophyllum, *Podophyllum peltatum* (North America).

* Poppy, *Papaver somniferum*, (β) *glabrum*, (γ) *album*.