

# JACOB BELL (Ed) *PHARMACEUTICAL JOURNAL AND TRANSACTIONS* X 1850–51 (1851)

## MITCHAM: ITS PHYSIC GARDENERS AND MEDICINAL PLANTS.

pp.115-119

MORE than 2000 years ago the physicians of Greece were supplied with herbs, of which their *Materia Medica* chiefly consisted, by a class of persons called ριζοτομοι (rhizotomi or root-cutters), who occupied themselves with the collection and sale of roots and herbs. They are mentioned by Theophrastus<sup>1</sup> in connexion with the φαρμακοπωλαι (*pharmacopolæ* or *pharmacopolists*). Most of them were illiterate and superstitious, and ascribed magical virtues to the roots and herbs which they collected.

Among the Romans these cullers of simples were termed *herbarii* (*herbarists*), and, if we are to believe Pliny,<sup>2</sup> they were a sad set of knaves.

At the present day, and in our own country, the ριζοτομοι of the Greeks and the *herbarii* of the Romans, are represented by a class of persons called *simplers*, who go about the country collecting those medicinal herbs which grow wild, and the demand for which is in sufficient to induce the dealers to cultivate them. The plants thus collected are sold chiefly to the *herbalists*, by whom the profession and public are supplied.

But those medicinal plants for which there is a sufficient demand, and which can be grown in this country, are cultivated in *physic gardens* or *physic grounds*, by persons called *physic gardeners* or *herb growers*.

Although the cultivation of medicinal plants is carried on in various parts of England, yet more land is employed in this way in Surrey than in any other county; and by far the greatest part of our *physic grounds* lie in the parish of Mitcham, and its neighbourhood, about nine miles from London. The soil of this place is a rich black mould.

The cultivation of physical plants at Mitcham commenced about a century ago. Lysons,<sup>3</sup> who wrote in 1796, says, that forty years before his time there were only a few acres employed in the cultivation of medicinal herbs in this parish; whereas, at the time he wrote, about 250 acres (of which 100 acres were devoted to the cultivation of peppermint) were occupied by *physic gardeners*.

At the present time more than 800 acres are devoted to the cultivation of medicinal herbs, at Mitcham, Merton, and Carshalton.

About 1768 or 1769, Mr. Potter began the cultivation of *physic plants* at Mitcham. He was succeeded by his relative, Mr. James Moore, who furnished Mr. Malcolm with the information contained in his work relating to the medicinal plants cultivated at Mitcham.<sup>4</sup>

The following are the names of the principal growers at the present time, with the number of acres of land each person has under cultivation, and the number of stills in use.

<i>Growers' Names.</i>	<i>No. of Acres.</i>	<i>No. of Stills.</i>
Mr. Moore	300	5
" Arthur	300	3
" Martin	40	3 (not much used).
" Newman	40	1
" Sprules	50	2
" Weston	<u>40</u>	<u>0</u>
	820	14

Several other growers cultivate a few acres of land.

A considerable number of medicinal plants are cultivated at Mitcham. Among the most important of these may be mentioned *aconite*, *chamomiles*, *belladonna*, *elaterium*, *liquorice*, *henbane*, *lavender*, *spearmint*, *peppermint*, *roses*, *poppies*, *savine*, *violets*, *angelica*, *stinking orache*, *caraway*, *foxglove*, *lovage*,

<sup>1</sup> *Hist. Plantarum*, lib. ix., cap. ix.

<sup>2</sup> *Nat. Hist.*, lib. xxi., cap. lxxxiii., ed. Valp.

<sup>3</sup> *Environs of London*, vol. i.; County of Surrey, p. 350. 1796.

<sup>4</sup> *Compendium of Modern Husbandry*, vol. iii., p. 116. 1805.

*elecampane, marshmallow, and hemlock.* The principal part of the growers cultivate only peppermint and lavender, and some a few chamomiles. Mr. Arthur grows rather a larger number of plants than any other.

We propose occasionally to notice a few of the more interesting of the physical herbs cultivated at Mitcham, beginning with chamomiles and lavender.

## I. CHAMOMILES.

1. *Varieties.*—There are two well-known sorts or varieties of the officinal chamomile (*Anthemis nobilis*, Linn.) cultivated at Mitcham: one called the *single chamomile* (*chamomelum flore simplici*), the other termed the *double chamomile* (*chamomelum flore pleno vel flore multiplici*).

In the normal or original state, the flower, which is a composite one, has one row of white female ligulate florets, encircling a disc of yellow hermaphrodite tubular florets; and this state the flower is said to be *single*. But the yellow hermaphrodite tubular florets have a strong tendency to become converted into the white female ligulate ones. Now, when only a few of the yellow florets have undergone this change, the flowers are still called *single*; but when all or most of them have suffered this conversion, they are then termed *double flowers*. It is obvious, therefore, that the terms “single” and “double” are, to a certain extent, arbitrary. Flowers with a single ring of ligulate florets are certainly single, while those which have no tubular florets are decidedly double. But between these extremes there are all gradations.

The change is irregular, and occurs to a greater or less extent in the same plant. At the commencement of the season a few flowers, single or nearly so, are found on plants, which, at a later period of the year, yield only double flowers. The result apparently depends in part upon the mode of cultivation, which is conducted habitually without reference to this particular object, and in part, probably, on other less obvious influences.

It is generally stated that the single flowers are more odoriferous, and yield a larger proportion of volatile oil.

Lewis observes of chamomiles, that "As their active matter is almost wholly confined to the yellow disc, and as the single have large discs, but the double very small ones, and when very double scarcely any at all; it is plain that the latter cannot be equivalent to the former, unless taken in much greater quantity; and, therefore, the single or large-disced flowers alone ought to be employed for medicinal uses."

The double flowers, however, are much more showy, and hence are preferred by the public; double flowers being usually more admired in floriculture than single ones. Hence, therefore, in Chemists' and Druggists' shops the double sort is usually found; whereas at Apothecaries' Hall the single sort is exclusively purchased and sold.

We find it stated by Malcolm in 1805, and by Stevenson in 1809, that the single sort is almost exclusively sold to Apothecaries' Hall, while the double sort finds a ready sale at the Chemists' and physic shops.

On inquiry, we find that the Apothecaries' Company still exclusively keep the single sort, believing it to be the one intended by the College of Physicians. The Company purchase it of Mr. Moore.

It is very desirable to ascertain by direct experiment the actual quantity of oil yielded by single and double flowers respectively; and we should be glad to receive from any of our readers the results of their experience on this point. Mr. Brande states, that 100 lbs. of dried flowers yield, upon an average, two pounds twelve ounces of oil, and three pounds four ounces of *pharmaceutical extract*. We presume this is the experience of the operators at the Hall, where single flowers only are employed. At Mitcham two kinds of double chamomiles are distinguished, one yielding the ordinary yellowish oil, the other, which is called the new sort, a blue oil. The samples of each kind, which have been furnished us by Mr. Arthur, of Mitcham, by whom they are cultivated, are not distinguishable, except from a slight difference in the leaf, which in the new sort is more developed. The oil is generally distilled from the entire plant, not from the flowers only, as directed in the Pharmacopœia. By keeping, this blue oil<sup>5</sup> changes its colour, and becomes the usual yellowish or brownish yellow colour. The flowers which yield it, although fine in appearance when fresh, are liable to change colour by keeping. They are therefore less adapted for sale in the market than they are for distillation.

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<sup>5</sup> The *oleum chamomillæ* of continental writers is blue, and is sometimes termed *oleum chamomillæ cæruleum*. It is the produce of *Matricaria Chamomilla*, Linn. The *oleum chamomillæ romanæ* of the same writers, is the produce of *Anthemis nobilis*, Linn.

2. *Cultivation*.—Stevenson says that “The soil best adapted for chamomile is a dry sandy loam: the sets are planted about nine inches from each other, on beds four feet wide, with alleys of eighteen inches between them. The culture is very similar to that of peppermint; viz. constant attention to weeding, principally with the hand; the digging of the intervals at the beginning of winter, and covering the exposed and loose roots of the plants with fresh mould.”

Mr. Arthur informs us that chamomiles may be cultivated from seed, which plan is adopted for the introduction of a fresh variety from another locality, or by way of occasionally renewing the stock. But the plan commercially pursued is that of dividing the roots, each root forming the rudiments of three or four dozen plants. Mr. Arthur plants them in rows a yard apart, with an interval of about eighteen inches between the plants. If planted closer, the space is not sufficient for gathering the crops without treading on the plants. At the close of the season, a sufficient number of plants are preserved to furnish the roots for the ensuing season, and the remainder are destroyed.

March is the best month for planting; but they are sometimes planted in April, and occasionally in the autumn.

The crop is in perfection about July, and continues to yield more or less until September, and sometimes as late as October. The period, however, varies according to the season.

Either extreme of wet or dry weather is injurious to chamomiles. A soaking shower about once a week, with intervals of sunshine, is the most favourable weather.

Mr. Arthur states that chamomiles are most productive when grown in rather a heavy soil. A stiffish black loam suits them better than a light sandy soil, which latter causes them to become weak, or than clay, which is too heavy. They are benefited by changing the ground every two or three years. They require but little manure. If over manured, they run to stem and leaf, and the crop of flowers is less abundant.

When gathered, the flowers are placed on canvass trays in a drying closet, warmed by means of a cockle. They remain there about a day, which time is generally found sufficient.

The average crop per acre is six cwt., but the range is from three to ten cwt. The single flowers are by weight more productive than the double; but the price being lower, the value of the crop is about the same.

The flowers supplied to the English market are grown chiefly at Mitcham and in Derbyshire. Both kinds are of good quality, but we think a preference is generally given to Mitcham flowers.

The gathering costs from three farthings to one penny per pound. The cost of gathering and drying chamomiles is about 42s. per cwt.

The London market is chiefly supplied with chamomiles from Mitcham. The following, according to Mr. Squire,<sup>6</sup> are the quantities supplied to the principal dealers in London:

<i>From Mitcham.</i>		<i>From other places in the vicinity of London.</i>	<i>Total.</i>
Average of three years, 1840-41-42.	Average of three years, 1843-44-45.	Average of three years, 1843-44-45.	Average of three years, 1843-44-45.
12 tons.	4 tons.	16 cwt.	4 tons 16 cwt.

## II. LAVENDER.

One species of Lavender only is cultivated at Mitcham, namely, common or garden lavender, the *Lavendula vera*. D. C. The spike lavender, *Lavendula spica*, D. C., is not cultivated there.

Lavender is cultivated by dividing the roots, each of which forms the rudiments of three or four new plants. These are planted in rows about 18 inches apart, with the same interval between the plants. The second year, each alternate plant is removed to leave room for those which remain. It is common to renew the plantation after the second year; but Mr. Arthur, who has given much attention to this subject at Mitcham, has succeeded in preserving the same plantation during five or six years.

<sup>6</sup> *Pharmaceutical Journal*, vol. v., p. 356.

Lavender is liable to a disease when too thickly planted. This occurs chiefly in the middle of the plantation, and appears to result from the aroma of the flowers, which in excess has a poisonous influence on the plants. By thinning the plantation, and ensuring a free current of air, this influence is prevented or retarded. The disease is rarely if ever met with in gardens, where single plants are cultivated. Lavender does not require a very rich soil.

A good deal of oil of lavender is drawn at Mitcham. The capacity of the stills varies from 700 to 1000 gallons. The lavender packed in bundles called *mats* (about 1 *cwt.* each) is carried to the still-house. A 1000 gallon still holds from twenty to twenty-four mats of lavender. The mat or covering of the bundles is not put into the still with the herb.

The flowers are put into the still with the stalks as cut from the ground. It takes about two hours to get the steam up; then the finest oil is drawn for two and a half hours—that which comes afterwards is second or third quality. The oil from the stalks is not so volatile as the other, and comes last.

*pp.168-173 (Continued from p. 119.)*

### III. WILD OR SQUIRTING CUCUMBER.

We know of but two places in England where the wild cucumber (*Momordica Elaterium*, Linn.) is cultivated for commercial purposes; these are Mitcham, in Surrey, and Ampthill, in Bedfordshire. The London market is chiefly supplied from the former place.

This plant is a native of the south of Europe, but flourishes well by cultivation in this country. It is essentially an annual; but Mr. Arthur, of Mitcham, assures us that if the roots be covered up during the winter, the plants survive through several seasons, and he has now some which have lived three or four years. So that it would appear that, if carefully protected from the winter cold, its life is prolonged, and from an annual the plant becomes a perennial.

The seeds are usually sown about March, and the seedlings planted out about June. A considerable number of the Mitcham plants are self-sown. When they grow very large and free, the stems become extraordinarily broad and fat. We have now one before us, whose stem, as it issues from the earth, is round and about as thick as the forefinger; but it gradually becomes flat and larger, until at its broadest part it is nearly four inches wide and half an inch thick.

A wet season is injurious to the fructification of this plant; and the present season, we are informed, has been a bad one at Mitcham.

The only part of the plant which is of use is the fruit, which, as is well known, is remarkable for bursting when ripe, and expelling its seeds with a portion of its juice with great violence and to a considerable distance (some say as far as eighteen or twenty yards), whence the name of the plant — the *squirting* cucumber. The fruits which have arrived at maturity are of a yellowish green colour; and the slightest touch at this period will disengage the fruit from its footstalk, and cause the violent expulsion of the seeds. It is, in fact, dangerous to walk among the plants at this period; for painful irritation of the eyes is sometimes produced by the contact of the juice with the conjunctiva.

The cultivators of the plant, at Mitcham, sell the cucumbers by the bushel. Each bushel contains 40lbs., and the price ranges from 7s. to 10s. Forty-five years ago the price charged to the Apothecaries' Company was only 2s. the bushel.<sup>7</sup> In 1820 Dr. Clutterbuck states that half a bushel of the fruits cost half a guinea in the market.<sup>8</sup>

Elaterium is manufactured from the cucumbers in London, at Mitcham and at Ampthill. At the time (September 3rd) of our visit, this year, to the Mitcham physic-gardens, the manufacture of elaterium had scarcely commenced. Some of the fruits had been gathered; but the chief manufacture of elaterium was expected to commence about the 9th or 10th of September. The plants, at the time of our visit, bore numerous fruits, and were still flowering.

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<sup>7</sup> Malcolm, *Compendium of Modern Husbandry*, vol. iii., p. 122. 1805.

<sup>8</sup> *London Medical Repository*, vol. xii.

The manufacture of elaterium, as practised at Mitcham, may be divided into four stages or operations:—1st. Washing and slicing the fruits; 2nd. Expressing the juice; 3rd. Straining the juice and setting it aside to deposit; 4th. The collection and desiccation of the deposit called Elaterium.

1. Washing is only requisite when the fruits are dirty, not otherwise. Each fruit is sliced longitudinally, by which it is divided into halves.

2. The juice is expressed in a common screw-press. The sliced or half fruits are wrapped in a hempen cloth and then put into the press, which is screwed up with some considerable force. One of the men engaged in the manufacture of elaterium told us that he used as much force as he was capable of exerting in screwing up the press. By some, however, this powerful expression is considered objectionable, on the ground of inferior quality of elaterium which is in this way obtained.

3. The expressed juice is then strained. One manufacturer merely strains it through a kind of colander (a perforated metallic plate). Mr. Arthur tells us that he strains it through two sieves—one a hair sieve, the other a cypress sieve. Instead of the latter a copper wire sieve, having 100 wires to the inch, may be used. The colander, above alluded to, cannot, it appears to us, be sufficient to separate the various shreds and pieces of vegetable tissue which escape from the press along with the juice. The expressed juice, as it escapes from the press, is usually received in a small tub, and when this is full the juice is strained. This appears to us to be an error of the Mitcham manufacturers—the juice should be strained as it runs from the press, before it has had time to deposit.

The strained juice is then set aside for the deposit to take place. At Mitcham the deposit vessels are common tubs or half barrels about eighteen inches high. This part of the process it appears to us also admits of improvement. The deposit vessels should be made either of glazed earthenware or of glass. The elaterium is deposited from the juice in a few (usually three or four) hours.

4. When the deposition of the elaterium has taken place, the supernatant liquor is carefully poured off. The deposit is then placed on calico cloths resting on hair sieves, and is there allowed to drain for about twelve hours. The drained deposit is then removed by a knife, and spread over small cloths and dried on canvas frames in the drying stove.

By one manufacturer we were informed that he dried the elaterium on paper.

Mr. Arthur tells us that one bushel or forty, pounds of fruit yield about half an ounce of fine elaterium. This agrees with the experience of Dr. Clutterbuck, who states that half a bushel yielded “less than two drachms of elaterium.” Some persons, it is said, obtain as much as three-quarters of an ounce from the bushel of fruits; but probably this is effected by the use of extra pressure, by which elaterium of inferior quality is procured.

Good elaterium has a pale pea-green tint. Inferior qualities have a duller or sadder colour.

We were assured at Mitcham that the juice from which elaterium has deposited is not used to obtain a second deposit, but is thrown away.

The juice which is expelled along with the seeds scarcely becomes clouded by exposure to the air, and is believed to be inert; but that obtained by pressure, from the burst fruits, does become milky, and this deposit constitutes the elaterium. It follows, therefore, that recently burst fruits are nearly, if not quite, as good for making elaterium as those which have not burst.

#### REPORT OF AN EXPERIMENT ON FOUR BUSHELS OF CUCUMBERS.

The fruits were sliced longitudinally, the pulp and seeds carefully scraped out, immediately placed on a sieve, and stirred without pressure. The juice thus obtained was set aside for six or eight hours, and yielded 7½ drachms of remarkably fine elaterium (No. 1), of pale green colour, and having the strong characteristic aroma which has been compared to that of senna or tea. The pulp and seeds were then washed in a little distilled water, subjected to gentle pressure, and, on being set aside to deposit, yielded half an ounce of elaterium (No. 2), of a greyish green colour, and having rather less of the fragrant odour.

The sliced cucumbers were then washed with distilled water and pressed, The deposit obtained (No. 3) amounted to an ounce. It has a dark, dirty, olive- green colour, less aroma than the former products, and is apparently unfit for use.

The fracture of the three samples differs considerably; No. 1 being the most friable, brittle, and easily reduced to powder; No. 2 similar, but in a rather less degree; No. 3 is more tough and gummy in its fracture.

In order to obtain the maximum product of good elaterium, it is necessary to strain off the liquid from the pulp and seeds as quickly as possible after the cucumbers are cut. The deposit speedily takes place on exposure of the juice to the air, and unless the above precaution be taken, a portion of it is likely to be left in the sieve with the pulp; or, if afterwards obtained by washing, it is more or less contaminated with the inert constituents of the pulp.

#### IV. ROSES.

Two sorts of roses are cultivated at Mitcham, namely, one known there as the *Damask Rose*, and which Dr. Pereira<sup>9</sup> states to be the *Rosa gallica*, var. *δ officinalis*, De Candolle; and the second called at Mitcham the *Provence* or *Cabbage Rose*, and which, according to Dr. Pereira, is the *Rosa centifolia*, var. *α vulgaris foliacea*, De Candolle.

Mr. Moore (1805) states that:

"The ground is prepared in the same manner as for lavender and liquorice, and the roses planted three feet asunder, are kept well cleaned and hoed, and in the autumn all the superfluous and dead shoots are cut out, and the ground dug between them. Every other year they are refreshed with twenty-four loads of spit dung, pointed in between them, and close to the roots."

"Mr. Moore has about seven acres of the Damask Rose and three of the Provence or Cabbage Rose, of each of which he plants a few every year to keep up a succession in high order."<sup>10</sup>

The following is the mode of cultivation as now practised by Mr. Arthur:—

##### 1. The Damask or French Rose—*Rosa Gallica*, var. *δ officinalis*, De Cand.

These roses are planted in rows a yard apart, with about eighteen inches between the plants. The time for planting is autumn or spring. They are propagated by dividing the roots, and also from suckers or runners, which throw up fresh plants. After about three years the plant is liable to be attacked by an insect, the maggot of which destroys the leaves and the young buds. It is, therefore, usual to renew the plantation every two or three years. Some fresh plants are grown every year, only the best of the old stock being preserved. After the fourth year the plants are worth nothing. The tops of the plants are cut every year with shears to encourage the growth of new shoots. Roses will grow either in a light or heavy soil, but they flourish best when the soil is rather heavy.

The season for gathering the flowers of the damask rose commences early in June, and lasts about five or six weeks. They are gathered by women and children twice a-day, in order to secure the buds before they are too much expanded. The buds are dried in stoves in the same manner as camomiles, except those required for conserve, which are sent to market in the fresh state.

##### 2. The Provence or Cabbage Rose—*Rosa centifolia*, var. *α vulgaris foliacea*.

These roses are propagated by dividing the roots, and the mode of cultivation resembles, in most respects, that which is adopted with the other variety. They are not, however, liable to the maggot, and the plants are therefore not renewed so often. They continue to flourish for many years. They require more care in pruning, the old wood being cut away with a knife, which causes new shoots to be formed, and it is these latter which produce the flowers.

The gathering usually commences the last week in June, and is continued for about five weeks. The flowers being used in the expanded state they are gathered every other day, which is found to be often enough.

In the process of distillation it is a common practice to put the entire flowers into the still as received from the grower, but the result is much improved by rejecting the calyx. This is rather troublesome, as each flower must be separately stripped, which occupies considerable time and increases the expense; but the labour is well bestowed, as the water is much more fragrant. During the distillation a quantity of

<sup>9</sup> *Elem. of Materia Med.*, vol. ii., p. 1548. Second Edition.

<sup>10</sup> Malcolm, *Compendium of Modern Husbandry*, vol. ii. 1805.

concrete essential oil floats on the water, which, when collected and filtered, resembles the foreign otto of roses. We have seen about half-an-ounce, which resulted from the distillation of 150 gallons of rose water. The quantity, however, is too small to be worth collecting for sale, and it is generally supposed that its abstraction impoverishes the water; and that, although the water is saturated at the time, it afterwards dissolves by degrees the essential oil which is left floating in it. The water should be strained before it is used, as the particles of oil are likely to produce irritation, especially when the water is used for eye lotions.

## V. ACONITE OR MONKSHOOD.

We find that three sorts of aconite or monkshood are cultivated at Mitcham; but on the 3rd of September (1850) only one sort (termed *giant monkshood*) was in flower.

1. The usual sort cultivated is called *common monkshood*, but we were too late in the season to see it. From the description which was given to us of it, we suppose that it is probably *Aconitum Napæus*. We were informed that it is planted in the autumn (October) by dividing or separating the tubers, and the roots may be gathered the following autumn; but it is a better practice to leave them for two years in the ground. When gathered, they are washed and dried. This sort of aconite flowers in June. One of the growers informed us that he was in the habit of cutting off the flowers; we suppose for the purpose of promoting the growth of the roots.

2. Mr. Arthur informs us, that the preceding is the only sort of aconite which he cultivates; but that there is a party-coloured sort grown at Mitcham, the roots of which are sold in the London market. The flowers are white, with a little blue in them. It is a fine tall plant, which, like the common aconite, flowers early in the season. We have had no opportunity of seeing this sort.

3. At Mr. Moore's physic-grounds we found another sort of aconite in cultivation, under the name of giant monkshood, but we were informed that as yet none of it had been taken to market. The specimens which we saw were about five feet high. The inflorescence was a somewhat loose panicle, with ascending stiffish branches, the helmet conical, the colour of the flowers a paler or brighter blue than that of *A. Napellus*, the staminal filaments hairy, the carpels or young fruits converging. The last character readily distinguishes it from *A. Napellus*, the carpels or young fruits of which diverge from each other. It appears to be referable to Reichenbach's<sup>11</sup> section Corythælon, which is characterised as follows:—(Rad. tuberosa, fol. 5-7- pedata) perianthio deciduo, fructu juniori nutante, carpidiis apice convergentibus." In this section Reichenbach places three species—*A. palma tifidum*, Reichenb., with smooth filaments; , Bernhardi, with hairy filaments and conical helmet; and *A. Stoerkianum*, Reichenb., with hairy filaments and vaulted helmet. From these characters this giant aconite appears to be *A. exaltatum* of Bernhardi, of which "A. decorum" is given by Reichenbach as a synonyme. In confirmation of this statement we find that the giant aconite of Mitcham agrees in every particular, which we can discover, with a plant growing in the gardens of the Royal Botanic Society, Regent's Park, and ticketed "Aconitum decorum." Reichenbach says, this species flowers in July and August in Germany: we found it in flower and beginning to give fruit, both at Mitcham and at the Regent's Park, in the beginning of September.

## RESULT OF A FEW DISTILLATIONS OF OIL OF LAVENDER ON THE SMALL SCALE.

From the following statement it will be seen, that the product of oil varied considerably in quantity in the several distillations, although all were performed under similar circumstances. A deficiency in the product of the first distillation might have been expected, as the water, having been reserved from the last season, had probably lost some of its strength. In the other operations the water was returned fresh into the still. The quantity of water used was fifty gallons. Of this about thirty gallons were preserved from each distillation to be returned into the still, and the remaining twenty gallons added to make up the quantity. That which remained in the still after each distillation was thrown away. The difference in the product, in all probability, depends chiefly on the state of the plant.

The weight of a dozen bundles of lavender was about 20lbs. The stalks were cut off before distillation. The price per bundle being about 2s. 6d., it will be seen, on calculation, that the cost of the oil, when obtained in this way on the small scale, is considerably above the market price.

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<sup>11</sup> *Flora Germanica Excursoria*.

<b>Aug. 7th, 15 doz. bundles lavender</b>	lb	oz..
Product 1st....	0	15
" 2d. ...	0	2½
	1	1½
<b>Aug. 8th, 24 doz. bundles</b>		
Product 1st....	1	4½
" 2d. ...	0	3½
	1	8
<b>Aug. 9th, 24 doz. bundles</b>		
Product 1st....	1	10½
" 2d. ...	0	4½
	1	15½
<b>Aug. 10th, 24 doz. bundles</b>		
Product 1st....	1	4½
" 2d. ...	0	5
	1	9½
<b>Aug. 12th, 24 doz. bundles</b>		
Product 1st....	1	4½
" 2d. ...	0	8½
	1	12½

<b>Aug. 13th, 24 doz. bundles</b>	lb.	oz.
Product 1st....	1	7½
" 2d. ...	0	8½
	2	0½
<b>Aug. 14th, 24 doz. bundles</b>		
Product 1st....	1	7½
" 2d. ...	0	5½
	1	13
<b>Aug. 15th, 24 doz. bundles</b>		
Product 1st....	1	12
" 2d. ...	0	4½
	2	0½
<b>Aug. 16th, 24 doz. bundles</b>		
Product 1st....	1	7½
" 2d. ...	0	1½
	1	8½
<b>Aug. 17th, 24 doz. bundles</b>		
Product.....	1	13

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#### V. HENBANE.

In the notices of the Mitcham physic gardens, by Lysons, Malcolm, and others, no mention is made of henbane. We may, therefore, infer that its cultivation at Mitcham is comparatively modern.

Two varieties of henbane (*Hyoscyamus niger*, Linn.) are cultivated by the herb-growers at Mitcham, the biennial and the annual.<sup>12</sup>

Var. *α biennis*. Biennial black henbane.—The plants of this variety are stronger, more fully developed and branched, more clammy, and possessing in a higher degree the downy character and peculiar odour of the plant. The leaves are deeply incised and the flowers reticulated with deep purple veins. During the first year of its growth, the plant has no aerial stem, all the leaves being radical and stalked. In the autumn these leaves die, but the root survives the winter, and in the following spring sends up an aerial stem, which grows to the height of two, three, or four feet. The plant flowers towards the end of May, or in June.

Var. *β annua*. Annual black henbane.—This was at one time considered to be a distinct species, and was called *Hyoscyamus agrestis*. It is now admitted to be a variety only. The root is annual, the stem smaller, less branching, and less downy, the leaves are less deeply incised or sinuated, less hairy and clammy. It flowers in July or August. Altogether, it may be regarded as a weaker and shorter-lived variety. Not unfrequently its corolla is devoid of the purple veins. This peculiarity was at one time thought to indicate a distinct species, which was named *Hyoscyamus pallidus*.

Miller mentions in his *Gardener's Dictionary*, that a variety of *H. niger* was found by Professor John Martyn, near the castle at Cambridge, about the year 1729, with the corolla and anthers of a pure brimstone

<sup>12</sup> See a paper on this subject by Dr. Pereira, in the *Pharmaceutical Journal*, vol. ii., p. 122



colour, without the least tinge of purple. The seeds being sown in the botanic garden at Chelsea, produced the very same variety. But he does not say whether this was an annual or biennial sort.

Mr. Babington states that this non-reticulated sub-variety grows wild at Esher, in Surrey. On inquiring of Mr. Arthur, of Mitcham, we found that this non-reticulated sub-variety was known to him, though it is not distinguished as a different sort by the herb-growers.

No positive evidence has hitherto been adduced of the superiority of the biennial over the annual sort; but the prevailing belief is, that the more fully developed, and longer-lived plant, in all probability, would more perfectly elaborate its peculiar juices, than the weaker and shorter-lived sort, and on this ground, it is presumed to possess greater activity. Although the present Pharmacopœia (1836) leaves the Pharmaceutist to use either sort, the forthcoming new London Pharmacopœia, it is reported, will direct the employment of the biennial variety.

The biennial plant ought to be gathered for medicinal use during the second year of its growth, at or soon after the commencement of inflorescence. The leaves at this stage are attached to the stem which bears the flowers, and when the plant is entire no mistake can be made, as the leaves of the first year have stalks which issue from the ground, as described by Dr. Houlton, and figured in this Journal, vol. i., p. 406 and 427. Mr. Squire has also pointed out the importance of distinguishing between the first and second year's leaves. When the stalk is removed the distinction is less easy, and the herb, as sold in the market, not unfrequently contains a mixture of the two kinds.

Although the above are the general distinctive characters, they occasionally merge into each other in individual plants, so that it is not always easy to distinguish the varieties or age, especially when the plants have been packed for travelling, and when they have been partially or entirely dried. Consequently the purpose for which the first year's leaves are chiefly used is for preparation in the dry state, in which they might, on a superficial examination, pass for the second year's leaves. Sometimes, however, so little care is taken to disguise the fact, that the long stalks betray the age of the leaves. There is a strong temptation to use the leaves in this stage of their growth, first, because they yield a return which would otherwise be sacrificed; and, secondly, because in brightness of colour they surpass the mature leaves, and, therefore, attract those whose primary object is to please the eye. But the instructions contained in the Pharmacopœia to select the plant at the time of inflorescence, are founded on correct principles. Mr. Moore, of Mitcham, informs us, that he never sells the first year's leaves, considering them worthless.

The annual and the biennial varieties are cultivated at Mitcham in distinct plantations. Formerly the biennial was chiefly met with, and it was at one time a disputed point whether henbane was ever matured during the first year. Since this point has been decided, the annual plant has come into cultivation, and it has gradually superseded the biennial to a certain extent, as it is found more profitable to realise the return in the shorter period. The seeds are sown early in the spring; as soon as the weather is favourable the annual plants are thinned, if necessary, and the crop is gathered about July or August.

The biennial plants are transplanted in the spring of the second year, and the gathering of the crop commences sometimes as early as May, and generally continues throughout June, and the early part of July.

It is usual to change the ground every two or three years; but this appears to be optional, as the plant grows wild in many places for ten or twenty years in succession, and some of the finest biennial plants are met within the wild state. Mr. Bridger (at Mr. Moore's, Mitcham) informs us that he has seen specimens of these plants weighing as much as fourteen pounds, while the annual variety seldom exceeds three or four pounds, and the average much less.

The following report shows the variation in the product of extract arising from various circumstances. The notes were taken merely for private use, but they are quoted from the original memoranda, including the cases of failure in the result. With two exceptions the plant was furnished by the herbalist or grower, as the biennial variety in the second year of its growth. The leaves were separated from the stem, sprinkled with water and crushed, the stem being rejected.

June 13, 1844—Henbane, 3cwt. 21lbs., produce 14lbs. 9ozs.

The herb was crushed in a mill, and brought to the premises in the state of pulp. This plan was found not to answer: the delay occasioned by its transference through the different stages of the process impaired the quality, and although the produce was large it was unfit for use.

The plan of crushing the herb in a mill, although the most effectual in regard to the quantity of extract produced, is liable to this disadvantage, that when the herb is too much crushed, the inert fibres are reduced to a pulp, and may in part pass through the cloth with the juice. In the following cases the plant was bruised in a marble or stone mortar with a wooden pestle:—

		cwt. lb.		produce	lb. oz.	per cwt.
1845	June 19,	1 0	.....	2	10	2 10
"	July 12,	1 0	.....	"	3 13	3 13
"	" 16,	1 0	.....	"	3 10	3 10
"	" 23,	1 56	.....	"	4 12	3 1 $\frac{3}{4}$
1846	May 29,	2 0	.....	"	4 10 $\frac{1}{2}$	2 5 $\frac{1}{4}$
"	June 8,	1 39	.....	"	4 14	3 2
"	" 13,	1 0	.....	"	2 10	2 10
"	" 17,	1 0	.....	"	2 8	2 8
"	" 30,	1 5	.....	"	2 15	2 14
"	July 1,	1 7 (annual)	.....	"	3 4	3 3 $\frac{1}{2}$
1847	June 14,	1 40	.....	"	3 12	2 2
"	" 22,	3 0	.....	"	6 12	2 4
"	" 23,	1 56	.....	"	4 9	3 0
"	" 24,	2 0	.....	"	3 14	1 15
1847	July 10,	2 0 (old and bad)	product not fit for use			
1848	June 2,	2 0	.....	"	5 1	2 8 $\frac{1}{2}$
"	" 3,	2 0	.....	"	5 8	2 12
"	" 6,	2 0	.....	"	6 12	3 6
"	" 7,	2 0 (old)	.....	"	4 14	2 7
1849	June 6,	2 56	.....	"	5 12	2 4
"	" 11,	2 0	.....	"	5 0	2 8
"	" 26,	2 0	.....	"	6 0	3 0
"	Aug. 6,	2 0 (annual plant, leaves only)	.....	"	10 12	5 6
1850	June 21,	1 56	.....	"	4 8	3 0
"	" 25,	1 56	.....	"	3 14	2 15 $\frac{1}{2}$

pp.297-299 (Continued from p. 236.)

## VI. MINTS.

We believe that these (especially peppermint) were among the first medicinal plants cultivated at Mitcham.

Three species are now cultivated in that locality; these are, Spearmint, *Mentha viridis*, Linn.—Peppermint, *Mentha piperita*, Linn.—and Pennyroyal, *Mentha Pulegium*, Linn.

These three species are cultivated in a similar manner. The mode of propagation is from young plants, which spring from the runners.

Early in the spring (April or May) the plants are drawn and planted out in rows. The space between the plants varies, according to the custom of each grower, from one foot to eighteen inches. Mr. Moore adopts the latter distance, which he finds more favourable to the strong and healthy growth of the plants. By placing them closer together, he considers that, although a larger number of plants are contained on an acre, the amount of produce is diminished by the crowding.

The first season they require to be constantly attended to during the weeding time, and should receive at least six or more hoeings, and this essential part of the cultivation is scrupulously attended to every succeeding year.<sup>13</sup>

<sup>13</sup> Malcolm, *Compendium of Modern Husbandry*, vol. iii., 1805

In or about the month of October (November or December, according to Malcolm) the beds are trenched like asparagus beds, the earth being piled up between the trenches, to the width of three or four feet, and sufficient depth to protect the roots during the winter. Unless this be done, the repeated weedings during the summer will have so exposed the roots of the plants as to make them more susceptible of frost and wet, and so much the more liable to be thrown out of the ground by severe frosts. This covering up is not necessary for pennyroyal, a plant which is to be destroyed.

Malcolm, in 1805, states that Mr. Moore usually grew about one hundred and fifty acres of peppermint, four acres of spearmint, and two acres of pennyroyal, and that fifty acres of the peppermint were renewed annually. This renewal he found to be absolutely necessary, because the wet and frost injure the roots very much, and, when severe, kill them. It follows, therefore, that each plant will last about three years. We were recently informed at Mr. Moore's, that the ground is changed every two or three years. The crop is gathered in the months of June, July, or August, according to the state of the season. The quantity now in cultivation at Mitcham is, of peppermint from 520 to 550 acres, spearmint seven acres, and about seven acres of pennyroyal.

The following were the expenses of cultivation in 1805:—hoeing, six shillings per acre; and covering, twenty-one shillings per acre.

Malcolm states, on the authority of Mr. Moore, that the produce of peppermint varies from four to six tons per acre, the average being five tons, and the price is stated to vary from 50s. to £10 the ton, the average being £5. Mr. Bridger says from two tons to three tons per acre would be the average of five years. This, however, applies to the herb in the dry state. In 1805 there were no stills in Mitcham, and the herb was sold fresh. [E N Montague notes: 'This is not correct: See Malcolm p.117 – here he states that there were five stills in Mr. Moore's farm yard – and p.121 – where he states that part of the crop of pennyroyal was distilled by Moore.]

The amount of oil yielded bears no definite relation to the quantity of the plant. The summer of 1848 was cold and wet, and the plant, although bulky, yielded a small proportion of oil. In 1849 the quality of the plant was much better, but the bulk much less. A larger supply of oil was obtained from about half the quantity of herb. The present season has been an average one.

We are informed, that on a rough estimate, a ton of peppermint yields from two-and-a-half to three-and-a-half pounds of oil; penny royal twice as much; spearmint about half as much as peppermint. The cultivation of spearmint is less profitable than of peppermint, and it is therefore grown only in sufficient quantity to meet the actual demand, and, in the absence of orders beforehand, (the ground is otherwise appropriated. Pennyroyal is the least valuable of the three species of mint. The mints are chiefly used for distillation.

## VII. LIQUORICE.

Two species of *Glycyrrhiza* or Liquorice have been employed, on account of the sweet underground stem called liquorice-root; these are, *G. glabra*, common or smooth liquorice, and *G. echinata*, echinate podded liquorice. At Mitcham, however, the first mentioned species is the only one cultivated. The quantity in cultivation is about fifty acres.

Common liquorice is sometimes cultivated in gardens as an ornamental plant. It rises to the height of four or five feet, having a smooth erect stem, and blueish or purplish papilionaceous flowers. By the herb growers, it is cultivated in beds three or four feet wide, banked and trenched. The underground stem (or root as it is usually called) throws out runners, from which new plants are obtained. Portions of these runners, three or four inches in length, having two or three buds, are cut off in the spring (about March) and planted out. The beds are kept clean during the summer; and about November, the old stems or stalks are cut off close to the ground with a sharp pruning knife. The spaces between the rows are dug up and left rough. No return is obtained until the third, fourth, or fifth year, by which time the plant has arrived at sufficient maturity. Every year the tops are cut off, the ground weeded, and runners taken, if wanted, for planting. The same ground will answer for liquorice for many years in succession, but it requires a plentiful supply of manure.

The roots are usually taken up with a three-pronged fork, and stacked in trenches until wanted. The stacking is effected in a moderately dry and sheltered place, the roots being placed upright with layers of earth between them, and a layer of several inches thick on the top. In this manner the stock is preserved in good order for several months. They are taken out when wanted, by *cwts*, and before being sent to London, are deprived of their crowns by chopping.

The fibres and small branches, which are removed in trimming, are called *offal*, and were formerly dried and ground to powder. Malcolm, on the authority of Mr. Moore, says, that 20 cwts. of root per acre may be reckoned a fair crop; and that prime sorts sold (1805) for from 50 shillings to £3 per cwt., and the powder (of the offal) for £3 per cwt. The expense of taking up the root by the fork costs £10 per acre. Mr. Bridger says £14 or £16 per acre.

*pp.340-342 (Continued from p. 299.)*

In our last number we noticed the cultivation of Mints at Mitcham. We have subsequently received the following communication on the subject, from a cultivator of medicinal plants at Carshalton, adjoining Mitcham.

#### PEPPERMINT, ITS CULTIVATION AND PRODUCE.

Land, intended for peppermint, should be of a rich friable soil, rather moist, but not stagnant. If poor, it should have about twenty tons of manure to the acre, nor less than twelve if previously dressed; if more, the plant is apt to go to leaf at the expense of the oil. This should be ploughed under ten inches deep in the beginning of winter, for although the stolons run upon the surface, the main roots descend deep in the soil, and this proceeding is requisite to keep the plants in a growing state during the hot part of summer. At the latter end of March, the furrow ridges are harrowed down to make the ground level for the planters, who proceed with an instrument resembling a rake, having four large projecting teeth set to the distance the rows are intended to be apart, which is from four to eight; when eight they are one foot apart; when only four, they are eighteen inches apart, and the plants one foot apart in the rows, and between every bed two rows are missed or left out for the allies the following year. The described tool is drawn up and down the land, marking the true position of the rows; the first year the allies are not thrown out. The planting is begun when the plants are about four or five inches high, according to the season, which is in April. The plants are the skimmings of old beds where they rise above four or five stems, or from old beds intended to be destroyed, or are purchased by the bushel. They vary very much in price, according to the previous season; about five shillings commonly, but sometimes from three shillings to twenty shillings. Although last winter was mild, they were very scarce, owing to the previous dry summer, which killed many of the old plants. The older the plants, the more oil they produce, in proportion to the bulk of stems. The first year the beds require hoeing five or six times, at an expense of six shillings per acre. The second year, at the approach of winter, the allies are thrown out to cover the mint, about two inches deep, for which the men are paid eighteen shillings per acre; if manured, three shillings more for spreading. The soil lays rough until the beginning of March, when it is harrowed down with light harrows, after which the beds are thinned for future beds, leaving about four or five to each stole, according to strength. Then follows dotting; that is, a man going over the beds, and pecking out the weeds with the corner of a hoe, and throwing them into the allies. For this he is paid four shillings per acre. From this time, until the mint is fit to cut, it is hoed about four times, at six shillings per acre. I omitted to say that the first planting cost twenty-one shillings per acre for labour. The third year is the same as the second, but the allies then becoming so deep and wide, occasion such an encroachment on the beds, that they are destroyed for other crops, but are frequently ploughed in for future plants the next spring, when they are entirely destroyed. Cutting begins when the mint is well in flower. The men are paid twelve shillings per acre for cutting. Their business is to cut the plant and lay it in Prussian mats (which are less than the Russian) in bundles weighing 1 cwt. each, in, which, if the weather be wet, it is skewered up and taken to the still at once, as the rain occasions a great loss of oil. But should the weather be favourable, it is dried in the field, for reasons to be explained.

The stills commonly hold a ton; that is, twenty, bundles of green mint, but when dried, thirty. When stills are hired, they charge twenty-one shillings per still, or once filling, which makes it advantageous to the grower. Green mint will run off three-and-a-half pounds on the average, and dry mint from four to five pounds. An acre of mint produces about five tons; that is, from four to six, as seasons produce great variations, both in plant and oil. Spearmint is treated in a similar way to peppermint, but the plant being stronger, requires more room. It is but little grown here, and that for culinary purposes.

#### *Diseases of the Mints.*

The greatest detriment to mints is termed the smut or parasitical fungi, of which there are three species, very troublesome, but more so in dry summers, which occasion the plants to get rusty and lose their leaf, diminishing the bulk very much. The worst is *Æcidium menthæ*, which spreads over the whole plant. It is of

a dull yellow colour, and attacks the plant just before it flowers. The next is *Uredo Labiatarum*. This attacks the under side of the leaf, and is frequently mixed with the former. It is of a light brown colour. A third species, *Puccinia menthæ*, attacks the plant in spring, and frequently disappears before the others are seen. The under part of the plant being covered with minute black spots, especially in wet seasons. Other fungi of a higher order, are parasitical on the stems after cutting, and probably arise from decay.

The mints or other medicinal plants grown in this parish, are on a small scale, many growers not having above half an acre, and of lavender about the same: the above are the principal herbs grown here; besides two or three small general growers, who supply Covent Garden.

About fifty acres of mint, and fifty of lavender, are grown at Carshalton,

*Lavendula latifolia*<sup>14</sup> has been grown here, and seeds very freely, but is not held in very high estimation.

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<sup>14</sup> *Lavendula latifolia* is in the *L. spica* of De Candolle — ED. PH. J.