

# INDIAN GARDENING

A MANUAL OF

FLOWERS, FRUITS, AND VEGETABLES

SOILS AND MANURES

AND

GARDENING OPERATIONS

OF EVERY KIND IN

BENGAL, THE UPPER PROVINCES, & THE HILL STATIONS OF INDIA

---

BY

LIEUTENANT FRED. POGSON

*Corresponding Member of the Agri-Horticultural Society of India*

---

VOL. II

THE KITCHEN GARDEN

---



1872

# CONTENTS.

## THE KITCHEN GARDEN.

## PAGE

|                                 |    |
|---------------------------------|----|
| Vegetable Seed List . . . . .   | 8  |
| Peas . . . . .                  | 9  |
| Beans . . . . .                 | 17 |
| Indian Beans . . . . .          | 24 |
| The Beet . . . . .              | 26 |
| The Cabbage Tribe . . . . .     | 30 |
| New American Cabbages . . . . . | 33 |
| Savoy Cabbages . . . . .        | 34 |
| Brussel Sprouts . . . . .       | 34 |
| Bregole, or Kale . . . . .      | 35 |
| Broccoli . . . . .              | 35 |
| The Cauliflower . . . . .       | 37 |
| Carrots . . . . .               | 38 |
| The Parsnip . . . . .           | 41 |
| The Onion Tribe . . . . .       | 42 |
| The Leek . . . . .              | 47 |
| The Shallot . . . . .           | 48 |
| The Garlic . . . . .            | 48 |
| Chives . . . . .                | 50 |
| The Artichoke . . . . .         | 51 |
| The Cardoon . . . . .           | 51 |
| The Celer . . . . .             | 52 |
| The Lettuce . . . . .           | 53 |
| The Endive . . . . .            | 55 |
| Corn Salad . . . . .            | 56 |
| The Cucumber . . . . .          | 56 |
| The Asparagus . . . . .         | 58 |
| The Parsley . . . . .           | 61 |
| The Fennel . . . . .            | 62 |
| Cress . . . . .                 | 63 |
| The Water-Cress . . . . .       | 65 |
| The Spinach . . . . .           | 65 |

|                                         | PAGE |
|-----------------------------------------|------|
| The Orache, or French Spinach . . . . . | 66   |
| The Love-Apple (Tomato) . . . . .       | 67   |
| The Radish . . . . .                    | 68   |
| Spring Radishes . . . . .               | 69   |
| Winter Radishes . . . . .               | 69   |
| The Rampion . . . . .                   | 70   |
| The Salsify . . . . .                   | 70   |
| The Scorzonera . . . . .                | 71   |
| The Skirret . . . . .                   | 71   |
| The Sorrel . . . . .                    | 71   |
| The Rhubarb . . . . .                   | 72   |
| Pumpkin . . . . .                       | 72   |
| The Kuræla . . . . .                    | 75   |
| The Turnip . . . . .                    | 75   |
| Cattle Turnips . . . . .                | 80   |
| The Potato . . . . .                    | 81   |
| Potato Cultivation from sets . . . . .  | 96   |
| Early Potatoes . . . . .                | 96   |
| Second Early Potatoes . . . . .         | 97   |
| Late and Main Crop Potatoes . . . . .   | 97   |
| The Yam . . . . .                       | 98   |
| The Saug . . . . .                      | 101  |
| The Capsicum . . . . .                  | 102  |
| The Horse-Radish . . . . .              | 103  |
| The Garden Mint . . . . .               | 104  |
| The Peppermint . . . . .                | 105  |
| The Bengal Sage . . . . .               | 105  |
| The True Sage . . . . .                 | 105  |
| The Marjoram . . . . .                  | 106  |
| The Thyme . . . . .                     | 106  |
| The Savory . . . . .                    | 107  |
| The Melon . . . . .                     | 107  |

# INDIAN GARDENING

A MANUAL OF

FLOWERS, FRUITS, AND VEGETABLES

SOILS AND MANURES

AND

GARDENING OPERATIONS

OF EVERY KIND IN

BENGAL, THE UPPER PROVINCES, & THE HILL STATIONS OF INDIA

---

BY

LIEUTENANT FRED. POGSON

*Corresponding Member of the Agri-Horticultural Society of India*

---

VOL. II

THE KITCHEN GARDEN

---



1872



CALCUTTA

CALCUTTA CENTRAL PRESS COMPANY, LIMITED

5, COUNCIL HOUSE STREET

135 A 24

I.

FLC

## PREFACE.

---

WE have composed this volume to show, first, the great advancement made in Vegetable culture in Great Britain, and the perfection at which it has arrived; second, that there is a proper and an improper way of cultivating Culinary Vegetables; third, to expose and explode that most popular of Indian fallacies, that the Hindoo *mallee* is a perfect master of the art of raising Esculents, if only supplied with good seed, a good well, and an inexhaustible supply of bovine manure of the lowest quality.

That the very best and freshest of Vegetable seed obtained from London, will germinate and grow in miserably inferior soil, is not a thing to be surprised at; but that any person can expect such very ill-used seed to produce even a single leaf corresponding in composition and quality to original or parental stock, is, indeed, a fitting subject for an expression of wonder.

THE constant complaint, that the Vegetables of Europe and America—famed for their superiority, succulence, flavour, nutritive and restorative power—when raised from imported seed under an Indian sky, become inferior in size, dry, vapid, barely

nutritive, and restorative only in a corresponding degree, is solely and entirely due to improper cultivation.

In the plains of Upper India, between the 20th of September and 20th of March the weather is generally most genial, and there is ample time to sow, grow to perfection, and gather all choice Annual Vegetables. In the Himalayas, we have a climate corresponding to, and in some respects superior to, that of England; yet the cry is the same, and so is the cause. An impoverished soil, without suitable mineral, saline, animal, and vegetable manure, is expected to supply the growth of plant (whose very leaves under proper culture, when dried and burned, produce for every 100lb incinerated, from 12lb to 23lb of mineral matter) with every description of plant-food in unlimited abundance, from an almost exhausted storehouse.

The absurdity involved is apparent. But so little is this very important subject understood (and so much is official disapprobation dreaded), that few besides ourselves have had the courage and independence to proclaim and maintain that no improvement in Horticulture and Agriculture can possibly take place until ignorance receives its *quietus*, and practical scientific knowledge is freely imparted to all classes connected with the soil, and unacquainted with the laws which govern its provident culture.

We are well aware that influential members of society, who are otherwise well informed and occasionally highly educated, have a profound contempt for all that appertains to agricultural knowledge of a scientific nature. But these men err through error; and as they must sooner or later be enlightened, we give a little significant agricultural information, which, if carefully perused and pondered over, will show why Indian Tobacco is worthless, and the degeneration of the Poppy-plant and its produce has preceded the advent of blight:—

“Mineral matter does not exist in the atmosphere, and therefore the plant must derive all it contains of this kind of matter from the soil in which it grows.

“All the substances which the animal body contains, is derived, either directly or indirectly, from vegetable food; the mineral matter, or ash, it leaves when burned must have come to it from the soil through the plant.”—*Professor Johnston.*

The animal is born, attains maturity, and, after death, returns to the soil all the substances needed for a further supply of plant-food. But as these are only largely to be met with in the vicinity of its place of sepulture, the plants growing beyond its limits can derive no benefit therefrom. Hence the necessity for the artificial manuring of land under regular culture.

On this subject Professor Johnston, who is supported by Baron Liebeg, tells us that "it is not any kind of earthy matter, indifferently, which the plant-root sucks up and builds into the substance of its growing stem and leaves; it selects, as it were, only the rarer and more precious materials of which the soil consists, and from among these, again, such as natural waters can more or less readily dissolve. Phosphoric acid, lime, magnesia, and certain kinds of saline matter—of which we may take common salt as the representative—are the most important of these substances. Generally speaking, these ingredients exist but sparingly in the soil. The productiveness of a tract of land, therefore, in so far as it depends on their presence, is kept up either by a constant natural circulation of the same quantity of these matters, or by the addition of periodical supplies from some other source, equal in kind and amount to those which the yearly herbage carries away."

If this restoration does not take place, we may with certainty predict that what has happened on a very large scale in America, will sooner or later be repeated in India.

The American colonist of the past generation had the same sublime contempt of Scientific Agriculture as the Hindoo and his admirer of our day. The former found that the seemingly exhaustless fertility of the soil had its limits. The change

which was foretold, and by him derided, made its appearance. "Creeping slowly over, and gradually dimming the landscape, the Corn is first less beautiful, then less abundant, and at last it appears to die altogether beneath the resistless scourge of an unknown insect, or a parasitic fungus." Under this pressure, the improvident colonist is compelled to forsake his long-cultivated farm, and has to hew out another from the native forest; and his successor, or heir, having become wise by dearly-bought experience, has adopted a proper system of husbandry, with most beneficial results, and he no longer sees Wheat overwhelmed by the fly, or Peach Orchards destroyed by the borer, or attacked by a mysterious disease called the "yellows."

In the American cotton districts, the land having been cropped year after year with cotton, produces plants which are attacked by the "rust," and others by the cotton-worm; and we now learn that new localities with suitable soil are being opened up and placed under cotton, which means that the worm and "rust" have conquered, and the land has been abandoned.

In India, thanks to improvident culture, the Coffee-plant is smitten with the leaf-disease, and is subject to the attacks of the Coffee-borer; the Tea-plant of Assam has now its diseases and insect

pects; the Wheat lands (once so productive) irrigated by the Ganges and Jumna Canals, are annually becoming less productive; the Sugarcane, wherever grown, yields only a very low crop; the Tobacco is simply worthless; and the Poppy, after fighting for years against ill-usage, avarice, and ignorance, has now bowed its head to the blight, whilst plants not so attacked have, by the decreasing quantity and viscid (in place of waxy) quality of their extracted opium, silently, but not the less surely, intimated to the self-sufficient Hindoo that their turn and time is also nigh at hand.

All this is taking place (and worse will most assuredly follow) as we write; yet, unless the Gentleman Amateur comes to the front, and, by using the various manures brought to notice, shows their inestimable value (and the immense harm done to millions of human beings by rendering their general and extensive employment impossible) in producing first-class Vegetables, Roots, Cereals, Sugar, Tobacco, and Opium, the Hindoo, from whose untiring industry this magnificent Empire derives its revenues, will succumb to adverse circumstances, and the admitted increasing impotence of the male, and sterility of the female, will culminate in a most detrimental reduction of population, as well as of agricultural crops.

In conclusion, we earnestly and respectfully suggest to all who have it in their power, to grow

no matter how small a quantity of good Vegetables, and to save the seed for distribution amongst native villagers, who come into civil and military cantonments to sell very inferior country Vegetables to all members of the community.

We have seen famine after famine take place, and have witnessed horrors endured by starving human beings, which would never have happened had a knowledge of the culture and preservation of dried Turnips, Potatoes, Onions, Cabbage leaves, and Beans been imparted to India's "working bee"—the ryot.

# CONTENTS.

## THE KITCHEN GARDEN.

## PAGE

|                                 |    |
|---------------------------------|----|
| Vegetable Seed List . . . . .   | 8  |
| Peas . . . . .                  | 9  |
| Beans . . . . .                 | 17 |
| Indian Beans . . . . .          | 24 |
| The Beet . . . . .              | 26 |
| The Cabbage Tribe . . . . .     | 30 |
| New American Cabbages . . . . . | 33 |
| Savoy Cabbages . . . . .        | 34 |
| Brussel Sprouts . . . . .       | 34 |
| Bregole, or Kale . . . . .      | 35 |
| Broccoli . . . . .              | 35 |
| The Cauliflower . . . . .       | 37 |
| Carrots . . . . .               | 38 |
| The Parsnip . . . . .           | 41 |
| The Onion Tribe . . . . .       | 42 |
| The Leek . . . . .              | 47 |
| The Shallot . . . . .           | 48 |
| The Garlic . . . . .            | 48 |
| Chives . . . . .                | 50 |
| The Artichoke . . . . .         | 51 |
| The Cardoon . . . . .           | 51 |
| The Celer . . . . .             | 52 |
| The Lettuce . . . . .           | 53 |
| The Endive . . . . .            | 55 |
| Corn Salad . . . . .            | 56 |
| The Cucumber . . . . .          | 56 |
| The Asparagus . . . . .         | 58 |
| The Parsley . . . . .           | 61 |
| The Fennel . . . . .            | 62 |
| Cress . . . . .                 | 63 |
| The Water-Cress . . . . .       | 65 |
| The Spinach . . . . .           | 65 |

|                                         | PAGE |
|-----------------------------------------|------|
| The Orache, or French Spinach . . . . . | 66   |
| The Love-Apple (Tomato) . . . . .       | 67   |
| The Radish . . . . .                    | 68   |
| Spring Radishes . . . . .               | 69   |
| Winter Radishes . . . . .               | 69   |
| The Rampion . . . . .                   | 70   |
| The Salsify . . . . .                   | 70   |
| The Scorzonera . . . . .                | 71   |
| The Skirret . . . . .                   | 71   |
| The Sorrel . . . . .                    | 71   |
| The Rhubarb . . . . .                   | 72   |
| Pumpkin . . . . .                       | 72   |
| The Kuræla . . . . .                    | 75   |
| The Turnip . . . . .                    | 75   |
| Cattle Turnips . . . . .                | 80   |
| The Potato . . . . .                    | 81   |
| Potato Cultivation from sets . . . . .  | 96   |
| Early Potatoes . . . . .                | 96   |
| Second Early Potatoes . . . . .         | 97   |
| Late and Main Crop Potatoes . . . . .   | 97   |
| The Yam . . . . .                       | 98   |
| The Saug . . . . .                      | 101  |
| The Capsicum . . . . .                  | 102  |
| The Horse-Radish . . . . .              | 103  |
| The Garden Mint . . . . .               | 104  |
| The Peppermint . . . . .                | 105  |
| The Bengal Sage . . . . .               | 105  |
| The True Sage . . . . .                 | 105  |
| The Marjoram . . . . .                  | 106  |
| The Thyme . . . . .                     | 106  |
| The Savory . . . . .                    | 107  |
| The Melon . . . . .                     | 107  |

# INDIAN GARDENING.

## THE KITCHEN GARDEN.

---

IN the plains of India, almost every house has either a Kitchen Garden, or sufficient land attached to it which may be converted into one. In the hills, the want of land prevents many a landlord and public-spirited tenant from making and keeping up a garden. The Kitchen Gardens already in existence are capable of very great improvement; and our object is to point out how this may be best and most economically effected.

We have explained the important part which lime plays in the economy of flowers and fruits, and we now wish to draw attention to the fact of its being present in all cereals and culinary vegetables, in greater or lesser quantity; and as it is very much needed in every Indian garden soil, we would recommend, as the first step towards improvement, that the soil of the entire Kitchen Garden be properly limed. The quantity of sifted lime to be allowed to the square yard should not be less than 3 chittacks, or 2,700 grains, which gives 300 grains of lime per square foot. For certain vegetables double this quantity will have to be used. At the lesser rate, a plot of garden land measuring 24 feet in length by 6 feet in breadth, will require

exactly 3 seers of sifted bazar *chunam*, and this quantity should be mixed up with twice as much sand, or finely pulverised earth, and applied by hand to the surface of the soil. This done, the land should be trenched, or well dug up with the mattock or *phowrah*, the clods broken, and the soil prepared for manuring and sowing.

In the plains, European vegetables are, as a rule, grown in the autumn and winter months; consequently all preliminary operations will have to be commenced on the cessation of the rains, or, say, any time between the 15th of August and the 15th of September: but in the Himalayas gardening is carried on throughout the year, the Pea, Cabbage, and Cauliflower not being affected by the snow or frost.

It is not our intention to notice in succession the large number of vegetables indigenous to India, many of which are not used by Europeans; but we shall select the best, and as all English vegetables will be fully dwelt upon, ample information will be supplied to enable the amateur to grow them to perfection.

When possible, we purpose giving a simple analysis of the vegetable under notice, as by this means the amateur will be enabled to judge what substances he should use or add to farm-yard manure to ensure the best produce.

It should be remembered that the manure obtained from the stall-fed cow, ox, and sheep, are very different, as regards quality and composition, from that produced by the grass-fed animal: hence, if the latter be used, the mineral deficiencies will have to be made good by artificial means. The value of the dog as a regular supplier of assimilated phosphate of lime cannot be overrated, and when we consider his faithfulness and general usefulness, the time spent on his food is amply repaid.

The fresh manure of the grass-fed cow contains in 100 parts as follows, viz. :—

|                |     |     |     |       |
|----------------|-----|-----|-----|-------|
| Water          | ... | ... | ... | 69.58 |
| Woody fibre    | ... | ... | ... | 26.39 |
| Animal matters | ... | ... | ... | 2.58  |

Of mineral matters—

|                    |     |     |            |
|--------------------|-----|-----|------------|
| Salt               | ... | ... | 0.08       |
| Sulphate of potash | ... | ... | 0.05       |
| Sulphate of lime   | ... | ... | 0.25       |
| Carbonate of lime  | ... | ... | 0.24       |
| Phosphate of lime  | ... | ... | 0.46       |
|                    |     |     | <hr/> 1.08 |
| Carbonate of iron  | ... | ... | 0.09       |
| Sand and waste     | ... | ... | 0.28       |

|       |     |     |              |
|-------|-----|-----|--------------|
| Total | ... | ... | <hr/> 100.00 |
|-------|-----|-----|--------------|

—Dr. Ure.

The manure of the Indian grass-fed cow probably does not contain half the above quantity of mineral matters, hence the absurdity of expecting superior crops from the use of such manure.

A supply of manure obtained from a stall-fed cow\* was dried and burned, and 100 parts of the ashes were found to contain as follows, viz. :—

|                  |     |     | Cow.         | Horse.       |
|------------------|-----|-----|--------------|--------------|
| Potash           | ... | ... | 17.15        | 9.33         |
| Soda             | ... | ... | 6.30         | 0.61         |
| Lime             | ... | ... | 7.31         | 5.22         |
| Magnesia         | ... | ... | 4.50         | 2.03         |
| Peroxide of iron | ... | ... | 3.34         | 2.03         |
| Sulphuric acid   | ... | ... | 3.23         | 3.92         |
| Silicic acid     | ... | ... | 41.00        | 59.96        |
| Phosphoric acid  | ... | ... | 17.05        | 7.92         |
|                  |     |     | <hr/> 100.00 | <hr/> 100.00 |
| Total            | ... | ... | 100.00       | 100.00       |

\* For the sake of comparison the analysis of horse-dung has also been given. The horse was fed upon oats, rye-bread, hay, and straw,—total 22½ lb daily; and the cow consumed 80 lb of mixed food per diem.

The urine of the stall-fed cow is of considerable value as manure, containing 56.74 of potash, 1.74 of lime, 4.09 of magnesia, and 4.63 of sulphuric acid in 100 parts; and the same quantity of horse urine contained, of potash, 28.97; of lime, 27.75; of magnesia, 4.22; and of sulphuric acid, 6.48.

It is the custom in India to waste these valuable liquid manures; the amateur gardener will however, at once, see their value, and will preserve and utilize both. Thus, crops requiring lime and potash would be very greatly benefited by solid and liquid horse-manure, whilst that of the cow would be of considerable value for succulent vegetables, such as Spinach, Cabbage, Lettuce, Celery, &c. Horse-manure, owing to its richness in lime, if applied to cotton, would produce an increased supply of cotton wool; but if cow manure was applied thereto, a most abundant supply of wood and leaves would be secured, with a very insignificant yield of cotton wool.

The manure of the camel, goat, and sheep is remarkably rich in ammonia and its salts; hence they should be mixed with finely pulverised earth and charcoal dust, and kept under cover apart from the preceding manures. The vegetables which contain a large percentage of nitrogen will thrive and flourish when treated with such manures. Peas, Beans, Linseed, the Poppy, and Tobacco, contain nitrogen in abundance, and, as a consequence, are greatly benefited by the application of either of the above.\*

---

\* The fossil bones so abundantly met with in the Sewallicks, Nebudda Valley, and other parts of India, is a manure of the very highest value, and would be worth £4 per ton in the London market. India is capable of supplying all Europe with this valuable mineral. But as it is Government property it may not be touched; and as it would be a presumption on our part to point out how it might be brought into use without the aid of the costly sulphuric acid, we are obliged to be silent.

With a little practice, the amateur will in a short time be able to make up all kinds of composts, and to apply them at his discretion.

The Chinese, who are great gardeners, as a rule manure each individual plant, and as the system is economical and effective, we would recommend its adoption.

The amateur gardener should understand something about the rough-analysis of soils, and the following instructions will be found of considerable use:—

1st.—Weigh a given portion of soil, heat it, and dry it: the loss is water.

2nd.—Burn whatever remains: the loss is chiefly vegetable matter.

3rd.—Add hydrochloric acid to the residue, and thus the quantity of lime may be determined, its presence being indicated by effervescence; and the longer it continues, the richer the soil in lime.

4th.—Wash a fresh portion of soil to determine the quantity of insoluble silicious sand.

5th.—To determine the presence of humic acid, dissolve a little common soda in water, add some of the soil thereto (previously reduced to a pulvurent form) and give it a good boil. Pour the solution into a glass and let it settle, and then pour off the coloured solution (without any sediment) into another glass. If vinegar or diluted hydrochloric acid be added to the clear brown or brownish coloured liquid, brown flocks will fall, which are humic acid. 36lb of carbon and 27lb of water form 63lb of humic acid. All black and dark-coloured soils are rich in this fertilizing substance; poor soils contain little; and sandy soils absolutely none. The manure of the elephant is

very rich in this substance, because he eats the entire Sugarcane, the dried stalks of Maize and Millet and, in addition, goodly-sized branches of trees, with their leaves, twigs, and bark. He assimilates their nourishment, and passes their woody or cellular fibre, 81lb of which contain 36lb of carbon and 45lb of water. We have mentioned this circumstance to show the value of elephant-manure, which can always be procured in military stations in the plains; it being of no use to the Department of Public Works, whose subordinates collect and burn bricks with stable litter, and horse and cow or bullocks' dung. These manures also contain much cellular fibre, derived from the oats, barley, hay, and grass consumed by these quadrupeds.

6th.—To determine the presence of phosphate of lime, or bone-earth, weigh out 209 grains of soil and place it in a glass, and pour half an ounce of diluted hydrochloric acid over it. Stir and mix with a glass rod, and allow it to stand for thirty hours; after which add half an ounce of distilled water, stir as before, and run through filter-paper. If to this clear solution liquid ammonia be added, a pale amber-coloured liquid will float (like oil on water) on its surface: this is phosphate of lime in solution, and it may be precipitated by further additions of liquor ammonia.

7th.—To determine the presence of iron, treat the soil, as before, with the acid, and to the filtered solution add a grain or two of prussiate of potash; stir as before, and in a few minutes the solution will become of a beautiful blue colour, owing to the presence of the iron present in the soil.

8th.—To determine the presence of nitrate of potash, or saltpetre, boil 500 grains of soil in two ounces of distilled

water. When cold, run through filter-paper; evaporate this clear solution (over sand or water, as most convenient) till reduced to a tea-spoonful. In it dip a slip of unglazed paper (the margin of a newspaper will supply the material needed), and dry it in the sun. If nitre be present, this slip of paper, on being fired, will behave exactly like touch-paper.

By these simple tests the presence of the substances named will be determined; but if the amateur desires to obtain a quantitative analysis of the soil, he will have to proceed according to the lucid instructions given in Professor Johnston's handbook on the analysis of soils.

The value of lime in the soil is so very imperfectly understood in India, and its use as a manure so little known, that we invite especial attention to the following, viz.:—"Lime is an essential ingredient in all fertile soils. In 1,000lb of such soil there are 56lb of lime, while barren soils contain only 4lb."—*Professor Johnston*. To apply fresh lime to such soils would be simple waste; but to withhold it from the majority of Indian garden soils is false economy. In like manner, if salt be present in the soil, the quantity prescribed as an addition to certain manures, will have to be lessened, otherwise not.

The following information on the subject of soils will be found of practical value by others besides the amateur gardener:—

"Soils have been divided in the following way, according to the proportion of clay, sand, and lime which they possess:

"1st.—Argillaceous soils, possessing little or no calcareous matter, and above 50 per cent. of clay.

"2nd.—Loamy soils, containing 20 to 50 per cent. of clay, with a little lime.

"3rd.—Sandy soils, containing not more than 10 per cent. of clay.

"4th.—Marly soils contain from 5 to 20 per cent. of calcareous matter.

"5th.—Calcareous soils contain more than 20 per cent. of carbonate of lime.

"6th.—Humus soils are those in which vegetable mould abounds."—*Professor Balfour.*

We give below a list of vegetable seeds of the best description, as supplied by Messrs. Carter & Co., seedsmen, London, and we purpose following the list in giving the necessary instructions for their cultivation:—

#### VEGETABLE SEED LIST.

- |                              |                                                         |
|------------------------------|---------------------------------------------------------|
| 1. Peas of all kinds.        | 17. Lettuce.                                            |
| 2. Beans, broad.             | 18. Onion.                                              |
| 3. French Beans and Runners. | 19. Parsley.                                            |
| 4. Beet.                     | 20. Parsnip.                                            |
| 5. Kale.                     | 21. Radish (long) & Turnip.                             |
| 6. Brussels Sprouts.         | 22. Spinach, summer and winter.                         |
| 7. Albert Sprouts.           | 23. Turnips (best for succession, including Six Weeks.) |
| 8. Broccoli.                 | 24. Tomato.                                             |
| 9. Cabbage.                  | 25. Vegetable Cress and Marrow.                         |
| 10. Savoy.                   | 26. Pot Herbs.                                          |
| 11. Carrots.                 | 27. Melons.                                             |
| 12. Cauliflower.             | 28. Potatoes, all choice kinds.                         |
| 13. Celery.                  |                                                         |
| 14. Cucumbers.               |                                                         |
| 15. Endive.                  |                                                         |
| 16. Leek.                    |                                                         |

## P E A S .

Peas of all kinds contain in

|                                     |    |           |
|-------------------------------------|----|-----------|
| 100 parts of water ...              | 14 | per cent. |
| „ husk ...                          | 10 | „         |
| „ starch and sugar ...              | 45 | „         |
| „ gluten and nitrogenous matters... | 24 | „         |
| „ fat ...                           | 2  | „         |
| „ ash or mineral matter ...         | 3  | „         |

The mineral matters present in the Peas are as follows, viz. :—

|                     |       |
|---------------------|-------|
| Potash ...          | 8.10  |
| Soda ...            | 7.39  |
| Lime ...            | 0.58  |
| Magnesia ...        | 1.36  |
| Alumina ...         | 0.20  |
| Oxide of iron ...   | 0.10  |
| Silica ...          | 4.10  |
| Sulphuric acid ...  | 0.53  |
| Phosphoric acid ... | 1.90  |
| Chlorine ...        | 0.38  |
| Total ...           | 24.64 |

The straw of the Pea contains—

|              |       |                     |      |
|--------------|-------|---------------------|------|
| Potash ...   | 2.35  | Manganese ...       | 0.07 |
| Soda ...     | nil.  | Silica ...          | 9.96 |
| Lime ...     | 27.30 | Sulphuric acid ...  | 3.37 |
| Magnesia ... | 3.42  | Phosphoric acid ... | 2.04 |
| Alumina ...  | 0.60  | Chlorine ...        | 0.04 |
| Iron ...     | 0.20  |                     |      |

One acre of land will produce 1,160lb of Peas, and they will contain 348lb of true nutriment; and as nourishing food they rank immediately after Beans.

An inspection of the analysis will show that Peas require a very considerable quantity of lime, and both the alkalies (potash and soda) must be freely present. Now, as our garden soil is extremely deficient in the three mineral

matters named, it stands to reason that unless they are added to the soil and compost, the crop must of necessity be small in quantity and low in quality.

It is nothing uncommon in the hills and plains to hear the finest descriptions of Peas spoken of as rubbish—all stalk and empty pods. But the “Sub-jantas” concerned having very little knowledge on the subject of Pea cultivation and the requirements of the plant, condemn the seeds and everything but their own want of information.

The soil in which the Pea most luxuriates is a free, light, but rich loam, abounding with vegetable matter. As such soils are very uncommon in Indian gardens, we must produce them by art. The first part of the work is done by liming the land, and the second by a liberal application of leaf-manure. Before sowing, the ground should be re-dug and broken up fine, and marked off into drills of suitable length. It is a great mistake sowing a single line of Pea seed with a space of little less than an inch between Peas and Peas. The best plan is to mark off two drills parallel to each other, with a clear space of nine inches between them. The seed, which should be soaked from 12 to 24 hours in “pickle,” is to be sown singly at a distance of three inches apart, and when the plants are three inches in height, the earth should be drawn up against their stems on both sides. The small furrow formed between the lines is to be strewn with sheep, goat, or rabbit-manure, and some pulverised soil strewn over the manure, so as to cover it slightly. This done, the stakes for the Peas are to be placed between the two rows, so that the plants may climb up freely from either side. In the plains, it will be necessary to water the plants once a week, if the weather is sultry; otherwise not till they come into flower. When the

pods are ready to gather, the *mallee* should be instructed to cut them off with a pair of scissors, thus protecting the stems from injury, which is sure to follow the usual system of wrenching off the pods with a jerk. When the first crop has come into full bearing, arrangements should be made for the next crop, the single seed being sown between two growing plants; and when the young crop is three inches high, the *mallee* should, with a pair of scissors, cut the haulm of the first crop close by the roots, and allow them to dry up unmolested. The second crop will soon grow over the first one, and when it, in its turn, is out of bearing, both should be carefully removed, dried, and stacked as food for cattle. Dried Pea stalks are very nutritious, and, chopped up with hay and oil-cake, afford excellent fattening food for sheep; and if given to milch-cows, will make their milk richer in cream and butter. The third crop of Peas should be sown on either side of the line of stakes, and at a distance of two inches therefrom, the sowing to commence as soon as the stalks of the first and second crop have been removed. On the removal of the third crop, or *succession*, the land is to be dug up and prepared for something else; and experience teaches us that the soil may be best purified by a rotation of Cabbage and Potatoes.

In the Himalayas, Peas are in season from March to the end of July, and those sown in August-September are fit to gather before the snow falls. It is useless sowing Peas after the 10th of October, as the frost prevents their germination. In the plains, what are called Early Peas should be sown as soon as the rains cease; and in the hills, these should be sown in March, as soon as the snow disappears, or, say, after the 12th and before the 20th, when the weather is generally fine. In the plains, the late kinds of Pea should be

sown at intervals of ten or fifteen days, and a too rapid and excessive growth of stalk should be kept under control by the judicious use of a pair of scissors. Until the Pea comes into flower, the stems should not be allowed to exceed three feet in height; but after the first set of Peas have formed, the growth should no longer be restricted.

The *pickle* means a solution of sulphate of iron in water, the proportions being one chittack of *kussées* dissolved in six wine quarts of cold water. If the garden is infested with white ants (*termites*), rats, or mice, take the Peas out of pickle an hour before the time is up, and allow them to drain on a cloth. Have ready an aqueous solution of sulphate of copper (made as described under "Flowers"), and dip the Peas therein for five minutes by the watch, and then take them out and sow without delay. By soaking the Peas in pickle, the process of germination is made to commence before they are sown, and the vigorous growth of the plant is secured. But this is not all, for the *mallees* can no longer steal the Peas after sowing, because the process of germination having commenced, its interruption destroys the seed, which ceases to be a marketable commodity. The immersion of the soaked Pea in blue vitriol water posions it most effectually, and not only protects it from vermin, but keeps it out of the dishonest *mallee's* cooking-pot. We may here mention that certain seed Peas have a wrinkled appearance, which is natural to them. Therefore, if the *mallee* asks for permission to throw them away as bad or spoiled seed, do not comply with his request. We have seen the request made and complied with, and as the amateur would have been greatly offended had we pointed out his error, and the traps set for his Peas (Carter's best and freshest), we witnessed the act of spoliation in silence.

We give a list of the best kinds of Pea now (1872) in cultivation in England, Europe, and America:—

1. LAXTON'S SUPREME PEA.—This is a magnificent, fine, large, and very distinct Early Pea—a green marrow fat of excellent quality; the pods are very long, and contain from nine to ten fully developed Peas in each pod. It is prolific, and grows to a height of four feet. (A prize Pea.)

2. CARTER'S LEVIATHAN PEA.—This is the latest wrinkled Pea in cultivation; very hardy, with a fine sugary flavour: pods of enormous size, and a very profuse bearer. (Highly recommended.)

3. PEABODY PEA.—A very prolific dwarf white Pea; an excellent variety for general purposes. (Much recommended.)

4. HUNDREDFOLD, OR THE COOK'S FAVOURITE PEA.—A late prolific variety (fourteen days later than the Supreme Pea), with remarkably fine pods; grows to the height of four feet. (A prize Pea.)

5. MULTUM-IN-PARVO PEA.—A dwarf prolific green marrow, with largish pods. (A prize Pea.)

6. TOM THUMB PEA.—The true American variety, under a foot in height; and very useful for growing in boxes and forcing. (Much recommended.)

7. DWARF WATERLOO PEA.—Is the second early white round Pea; one of the best, and a very prolific bearer. (Very highly recommended.)

8. WILLIAMS' EMPEROR OF THE MARROW PEA.—A blue wrinkled marrow Pea; very superior in flavour, and most prolific. It produces pods the whole length of the haulm, and is of branching habit, producing from two to five stems close to the ground, and again branching about eighteen inches or two feet higher up. The pods and Peas are of the

larger size. It is very hardy, and continues bearing until late in the autumn; height, six feet. (Very highly recommended.)

9. CARTER'S WHITE GEM PEA.—This is a very early variety; the pods large and well-filled, excellent flavour, and very prolific. It is a valuable acquisition to the list of early wrinkled Peas; height 15 to 18 inches. This is an American Pea, and introduced into England for the first time during the present season.

10. CARTER'S FIRST CROP BLUE PEA.—Introduced for the first time this season (1872). It is a good bearer; pods large and of uniform size. It is a fine flavoured Pea; height 12 to 15 inches.

11. LAXTON'S EVERGREEN PEA.—A smooth Pea, of a peculiar dark-green colour when cooked; very productive, and of excellent flavour. (A new Pea offered for the first time.)

12. LAXTON'S CONQUEST PEA.—A tall, late green wrinkled Pea, exceedingly productive, and of a fine rich flavour. This variety is most distinct, the seed being of a very bright-green colour with a white eye, the produce coming to table with a beautiful appearance. (A new Pea offered for the first time.)

13. LAXTON'S ALPHA PEA (called also THE EARLIEST WRINKLED PEA).—Pronounced by judges to be the very best of its season; praised for great excellence, delicate and sugary flavour. (A prize Pea, 1871.)

14. QUEEN OF THE MARROWS PEA.—Is a hardy Pea; and the blossoms not being liable to fall off in wet weather, it produces a most abundant crop of long well-filled pods, containing 6 to 9 Peas in each, and may be had in use from June to October; height 5 to 6 feet. (This Pea would

suit the Himalayas admirably, as most of the others cannot stand the incessant heavy rains.

15. LAXTON'S QUALITY PEA.—A second early wrinkled Pea of great productiveness and fine flavour. This Pea is very highly recommended by the Royal Horticultural Society of London.

16. LAXTON'S QUANTITY PEA.—A richly flavoured second early wrinkled marrow, esteemed for its robust habit and extreme productiveness. This Pea has been very highly commended for flavour and productiveness by the Royal Horticultural Society, Chiswick. (Very highly recommended.)

17. CARTER'S FIRST CROP, OR RING-LEADER PEA.—Its peculiar excellence consists in its being the earliest Pea in cultivation. (A prize Pea, very highly recommended.)

18. NEW EDIBLE-PODDED WRINKLED PEA.—A continental novelty of great merit. "The pods should be cooked whole, after having the back string taken off, and may be served in various ways, when they will be found a delicious addition to the dinner-table." (We consider this Pea would be of great use in the kitchen, for making vegetable *curries*, and adding to soups and made-dishes.)

19. LAXTON'S PROLIFIC LONG POD PEA.—This is one of the finest of the prize-taker class of green marrow Peas. It is a Late Pea, and very much recommended. (A prize Pea.)

20. KENTISH INVICTA PEA.—This is a round blue Pea, about two feet in height, with straight, handsome, well-filled pods; is earlier than the best stocks of DANIEL O'ROURKE, whilst the fact of its being a "blue Pea" proclaims it to be infinitely superior in flavour to any white variety in cultivation. This Pea is highly recommended by

Carter & Co., who supply the following very interesting information on the subject of the cultivation of Early Peas, viz. :—

|                      | Sown.    | In bloom. | Fit for use. |
|----------------------|----------|-----------|--------------|
| CARTER'S FIRST CROP, |          |           |              |
| (OR RING-LEADER) ..  | March 10 | May 23    | June 14      |
| KENTISH INVICTA ..   | March 10 | May 28    | June 16      |
| DANIEL O'ROURKE ..   | March 10 | May 31    | June 27      |

21. McLEAN'S BLUE PETER PEA.—Is a remarkably dwarf variety, not over six inches high; dark-green foliage, a splendid bearer, and of exquisite flavour, with large well-filled pods. This Pea was introduced for the first time this season (1872), and it is very highly recommended.

The above are selected Peas of the best kinds, and some of them are vegetable wonders. The last name has been produced by hybridization, and, if it succeeds in the Himalayas, will be much valued. A Pea six inches high, and yielding large, well-filled pods of exquisite flavour, is worth any money.

On the subject of Peas Mr. Firminger observes: "There is no vegetable of which the seedman's list contains so many varieties as the Pea. Between several, however, scarcely any difference exists but in name." This opinion was expressed in March, 1863, since which time great improvements have been made in Pea cultivation. The very best description of seed Pea would yield small-sized vapid Peas, if grown on a sandy or exhausted soil. It is by no means uncommon to see very fine large pods with imperfectly developed Peas within, and the *mallee*, as a rule, blames the seed, whereas the deterioration is exclusively due to an inferior soil and unsuitable manure. The field Pea of England has yet to be introduced into India as a

field crop. It will require the same sort of land and the same manures as prescribed for the garden Pea, and an acre of land so cropped will produce, on an average, 20 bushels or 1,160lb of Peas, with first-class Pea straw in proportion. The great value of the field Pea as an article of cattle food will be better understood when it is known that 1,000 parts of dried Peas contain, of carbon, 445; of hydrogen, 57; of oxygen, 430; of nitrogen, 35; and of mineral matters or ash, including the phosphates, 23.

We trust our recommendation will induce European landed proprietors, tea, coffee, sugar, and indigo-planters, to introduce and cultivate this Pea, and especially so if they are stock-breeders.

## BEANS.

The soil best adapted for Beans of all kinds is a firm loam, retentive of moisture; and to prepare such a soil artificially, a rich clayey soil should be selected and duly limed, and afterwards manured with a mixture of leaf-manure and sheep and goats' droppings in equal parts; the manure to be dug into the soil at least a month before the Beans are sown, and just previous to sowing the ground is to be re-dug and prepared as directed for Peas. The seeds should always be sown in rows, and one pint is considered enough for eighty feet of length. The Beans are generally sown between 2 and 3 inches deep and 4 inches apart (6 to 9 inches for Windsor Beans, and 18 inches for Scarlet Runners), re-turning the soil, and gently treading along the course of the row; after which the rake should be employed to level the surface. The Beans should be soaked in pickle before sowing, exactly as prescribed for Peas. Beans

transplant extremely well, and therefore may be sown thickly in autumn. All kinds of Beans flourish in the hills, provided the proper soil is selected, limed, and suitably manured; otherwise the pods seldom come to maturity, and this is especially the case with the Windsor Bean. The Scarlet Runner becomes a perennial at Simla, and, if annually manured, produces abundantly. We had some in our garden which were fourteen years old. When the transplanted Beans begin to grow, loosen the earth along the surface with a hoe, and so pile, arrange, and pot down the soil that the rains may not find their way directly to the roots, which would kill them. Beans suffer much from drought, hence the necessity of irrigation. If attacked by the black blight (*aphis*), topping, when insects are first seen, appears to be the only remedy.

In the plains, all sorts of imported Beans are sown in September-October, and as a consequence many of them fail; but in the Himalayas they should be sown as in England, only making the usual allowance for difference of latitude and altitude.

The seasons of sowing are autumn for the Mazagon, January and February for long pods, and from March to June for the Windsor. The various kinds of French Beans, imported Dwarf Beans, Scarlet Runners, and Indian Beans, may be sown at discretion in all April and May. Beans are greatly improved by crossing. Thus, to obtain a good variety, sow Windsor and long pods alternately in a row, and save the Beans, introducing in future sowings an occasional Windsor Bean, till the desired rich flavour be attained. The cross between the Scarlet Runner and Haricot, or White French Bean, produces an excellent variety. In India it is the custom to reject the Bean seed, and to eat the boiled

pod skins. In France, the young green Bean seeds are boiled exactly like green Peas and so eaten, the skins being thrown away. We make it a rule to follow the French plan, which has only to be tried to be generally adopted. Of course; immature or unseeded French and Indian Beans may be eaten as greens, and so may tender Carrot leaf stems; but when people feed on green Bean pods, they have no right to condemn Beans as tasteless, watery vegetables. There are some kinds of Indian Beans which have thick succulent pods; these are boiled and eaten, and are delicious, whilst their seed, when formed, is not fit to be eaten. Once upon a time we sent an old "Qui-hye" a basket of very fine Windsor Beans. We met him some days after, and asked him how he liked the Beans. "Liked the Beans well; they were like green leather, and as tasteless." We made some inquiries, and ascertained that the cook had sliced up and boiled the rough skins of the broad Windsors, and had kept the Bean seeds for his own private tooth. We have known Mazagon and long-pod Beans to be thrown out of a *dally*, because they were full of seed!

The Bean and the Pea contain the same quantity of water, husk, starch, gluten, fat, and ash or mineral matter. But the Bean is more nourishing than the Pea—its contained nourishment being represented by the figure 100, the Pea being 80.

An acre of land under Beans will, on the average, produce 30 bushels, or 1,980lb, and the quantity of true nourishment in the produce of an acre is 594lb; the Pea being 348lb, and the produce 1,160lb: hence Bean cultivation as a field crop is more profitable than Pea cultivation. But as the soils differ, it would not answer to grow Beans on Pea soil, and *vice versa*.

100lb of Bean ash, on being analysed, was found to contain—

|                 |          |                 |          |
|-----------------|----------|-----------------|----------|
| Soda and potash | ... 45lb | Phosphoric acid | ... 33lb |
| Lime            | ... 8½   | Sulphuric acid  | ... 4½   |
| Magnesia        | ... 6½   | Chlorine        | ... 1¼   |
| Oxid of iron    | ... ½    | Silica...       | ... ¾    |

And a sufficient quantity of Bean straw, on being burned, gave 31·21lb of ash, which was found to contain—

|               |             |                    |          |
|---------------|-------------|--------------------|----------|
| Potash        | ... 16·56lb | Oxide of manganese | 0·05lb   |
| Soda...       | ... 0·50    | Silica             | ... 2·20 |
| Lime          | ... 6·24    | Sulphuric acid     | ... 0·34 |
| Magnesia      | ... 2·09    | Phosphoric acid    | ... 2·26 |
| Alumina       | ... 0·10    | Chlorine           | ... 0·86 |
| Oxide of iron | ... 0·07    |                    |          |

The intelligent reader will not fail to observe that potash, soda, and phosphoric acid are present in very large quantity in the Bean plant, and as a natural consequence, if these be wanting in the soil, the Bean crop must fail; in fact, it cannot help doing so. With the above facts and figures at his disposal, he may, by a simple “rule-of-three sum,” calculate how many pounds of the various substances named should be added to the manure or compost applicable to the soil before it is sown with Beans, which, whatever their denomination, and whether grown in the garden or in the field, require a like soil and a manure to correspond.

The Bean to which precedence must be given is—

1. THE WINDSOR.—The land being prepared, sow at intervals from March to June, in the Himalayas. The best plan is to sow successive crops one after the other, according to the demand, as soon as the plants of the preceding sowing shall be quite above ground. The drills should not

be nearer to each other than thirty inches. Keep all Bean crops clean, and the surface of the ground about them rather open. Finally, remember the proverb, "Gather Beans and have Beans;" that is, never leave any pods to ripen: if redundant, let them be given away or sold, for a maturing pod arrests the fertility of the plant, by tasking all its powers. One or more drills should be sown in June exclusively for seed, which will ripen in September-October.

2. The **MALAGON BEAN** should be sown in autumn, or from the 20th August to the 30th of September; this is for the Himalayas. In the plains, the sowings should not commence till the rains have ceased, and then sow successive crops. This also applies to the Windsor Bean in the plains.

3. **LONG PODS** should be sown in the hills in all February to 15th March; and in the plains, in October-November.

4. **CARTER'S CHAMPION RUNNERS**.—A giant variety of Scarlet Runners. The pods are nearly twice the size of the old sort, and they hang nearly twice as thick; they frequently attain a length of ten inches, while still fleshy and tender, and without a trace of coarseness. The back string being taken off, the pods with their tender enclosed seed are boiled, and served at table with a seasoning of pepper, salt, and butter. When the seed hardens, the pods are no longer fit to eat; but the seeds should be scalded and their skins removed, after which they should be boiled, or stewed in gravy till tender. Season as before, and serve hot. The dish is delicious.

In the Himalayas, this and the common Scarlet Runner Bean should be sown in April, and as they will become perennials, an annual manuring and forking will suffice, the manure to be enriched with lime and potash with some soda.

In the plains, the seeds should be sown as soon as the rains are over, on land properly prepared and manured. Do not forget to soak in pickle. The plants, when three inches high, should have sticks put in the ground for their support.

On the culture of this Bean Mr. Firminger observes: "With the cultivation of it (Scarlet Runner) as a vegetable I have never had much success, the produce always proving very scanty and unsatisfactory. I have had plants in blossom in the rains. Their old familiar scarlet flowers looked very pretty, but they dropped off without setting a single pod."

We have quoted the above to show that the Scarlet Runner may be sown in the plains before the rains set in. We think, if watered, they might be sown in spring, and would survive the hot weather. The scanty crop and barren flowers are due to the soil and manure being unfitted for the plant. In the hills, this Bean grows low down in the hottest valleys. We would recommend acclimatized seed being obtained from Simla, Mussoorie, and Murree; and if this answered in the plains, a crop of Beans might be obtained during the rains, and perhaps throughout the hot months.

5. NEW CANADIAN EXPRESS RUNNER BEAN.—This is quite a new Bean, and is described as a hybrid between an American Bean (called the Horticultural) and White Case Knife—the earliest, most productive, and hardiest of all the Runners. It is cultivated extensively for the Canadian markets. (Very highly recommended.)

The following are all running varieties, and should be cultivated like the Scarlet Runners, only being sown from three to six inches apart, viz. :—

6. DUTCH CASE KNIFE.

7. FRENCH HARICOTS, OR WHITE SEEDED FRENCH BEAN.
8. GIANT WHITE RUNNERS.
9. ECLIPSE RUNNERS.
10. PAINTED LADY.
11. NEGRO WAX RUNNERS.
12. SCARLET RUNNERS, white seeds.
13. WHITE HARICOTS, for cooking.

BROAD BEANS, highly recommended :—

- |                                 |                                   |
|---------------------------------|-----------------------------------|
| 1. NEW GIANT LONG POD.          | 6. GREEN NONPAREIL LONG POD.      |
| 2. BECK'S NEW DWARF GREEN GEM.  | 7. EARLIEST DWARF FAN OR CLUSTER. |
| 3. JOHNSTON'S WONDERFUL.        | 8. IMPROVED WINDSOR.              |
| 4. THE MONARCH—a fine Long Pod. | 9. GREEN WINDSOR—fine.            |
| 5. EARLY LONG POD.              | 10. TAYLOR'S WINDSOR.             |

DWARF KIDNEY BEANS.—The varieties most highly recommended are :—

- |                       |                            |
|-----------------------|----------------------------|
| 1. SIR JOSEPH PAXTON. | 6. NEWINGTON WONDER.       |
| 2. THE CHINA.         | 7. SION HOUSE.             |
| 3. FULMER'S FORCING.  | 8. EARLY SIX WEEKS.        |
| 4. LIGHT DEN.         | 9. WILMOT'S FORCING.       |
| 5. NEGRO LONG PODDED. | 10. NEW AMERICAN PROLIFIC. |

Dwarf Beans of all kinds are planted in rows, and the seeds are generally sown, in the Himalayas, between the 15th of April and the middle of June. In the plains, the sowing should commence from the 15th September, and conclude by the 15th of October. Soak in pickle before sowing. The situation should be open, not crowded by other vegetable crops, or under trees. The introduction

and cultivation of the field Bean of England as an Indian field crop is strongly recommended to stock-breeders. The land should be prepared as prescribed for garden Beans, the same manures being used. Wheat or Barley generally follow a Bean crop in the United Kingdom.

#### INDIAN BEANS.

THE *Mukhun Saim* (*Canavalia gladiata*) OR BUTTER BEAN.—“The pod is large, sword-shaped, full nine inches long, and more than an inch-and-a-quarter wide. When sliced and boiled, is exceedingly tender and very palatable. The plant is a perennial, and a most extensive climber, ascending to the summit of the loftiest trees, and bearing year after year, from the end of the rains throughout the cold season, an abundant crop aloft in the branches. Sow the seed in June.” Dr. Roxburgh describes three varieties thus:—

“ $\alpha$  ERYTHROSPERMA.—Flowers and seeds red.

“ $\beta$  ERYTHROSPERMA.—Flowers white and seeds red.

“ $\gamma$  LEUCOSPERMA.—Flowers and large seeds white: pods two feet long, often twenty-seeded.” “This variety is considered the most wholesome of them all, and is extensively used at the tables of Europeans, as well as by the natives of Sylhet, where it is indigenous.”—*Firminger*.

These Beans are quite unknown to Upper India, and should be introduced. They would be highly prized in England.

THE KHUMACH (*Mucuna nivea*).—A very excellent native Bean; grows well at Simla. The seeds should be sown in May in the Himalayas; in July in the plains. These Beans are covered with a dark-coloured velvety skin, which should be scraped off previous to boiling, whole. Take

them out when boiled tender; cut into one-inch pieces; add butter, pepper, and salt; warm in a stewpan, and serve hot. The entire Bean is eaten and is delicious. It requires stakes fully eight feet in height, but may be trained to climb up a rope tied to a tree.

SHWET SAIM (*Lablab vulgare—a albiflorum*).—The tender pods are boiled and eaten, the seeds being carefully removed; and are never eaten by the natives.

JEEA SAIM (*L. rubriflorum*).—Flowers red, and the pod much esteemed by the natives.

GOORDAL SAIM (*L. purpurascens*).—Flowers large, purplish. A large variety, with seeds more remote than any of the other varieties, and the legumes are broader.

RCKTO SAIM (*L. purpureum*).—"Stem and the large flowers purple; pods deep purple."—*Firminger*.

All four kinds are cultivated in gardens, and supported by poles, often forming arbours about the doors of the huts of the native growers. The seeds of all are rejected.

INDIAN KIDNEY BEANS (*Lablab cultratum*).—These are all called *Saims*, and, as far as we can make out, are climbers. The tender pods alone are eaten, being made into *curries* by the Hindoos. The varieties named are:—

1. *KECFUM* (OR *Panch Saim*).—Pods straight; seeds reddish; flowers white, large.

2. *FALCATUM MINUS* (*Baghonuko Saim*).—Pods falcate, size of the little finger; flowers white, largish.

3. *FALCATUM MAJUS* (*Dood-pitulee Saim*).—Pods falcate, and much longer than in 2; flowers purple.

4. *GLADIATUM FLOREALBO* (*Sada Jamai-pulee Saim*).—Pod, gladiate-clavate—length of the little finger; flowers white.

ε. **MACROCARPUM** (*Gychi Saim*).—"The largest of all. Pods six to eight inches long; seeds black, with a white eye; flowers red."—*Firminger*.

**CHARI-KONEE SAIM, OR GOA BEAN** (*Psophocarpus tetragonolobus*).—It bears a curious four-sided pod, six or eight inches long and half-an-inch wide, with a leafy kind of fringe running along the length of its four corners. The pod is cooked whole, and so eaten. "This Bean is well worth a place in the garden, being ornamental for the large blue flowers it bears in the cold season, as well as for the effect of its curious pods hanging upon it. The seed is sown in the rains."—*Firminger*.

**THE LIMA BEAN** (*Phaseolus lunatus*).—The seeds of this Bean are annually imported from America, but, *Firminger* states, "the plant notwithstanding is a native of India. In this country it is not by any means as well known and appreciated as it deserves to be. Besides being a most delicious vegetable, it possesses also the merit of coming into season just when most others are gone off." The pod is not eaten. "But the large, flat, ivory-like Beans are shelled, laid in a pan of cold water, and boiled about two hours, or till they are quite soft. They have a mealy, roast-chesnut-like flavour." Sow in October in the plains—during May in the Himalayas. It is a climber.

## THE BEET.

**THE BEET-ROOT OR RED BEET** (*Beta vulgaris*).—The Hindoos apply the name *Choo-kun-dur* to all kinds of Beet, which is one of the most valuable of the spindle-rooted vegetables. Beet-roots should be boiled or baked till they become perfectly tender, when they may be eaten warm as

a dinner vegetable. When cold, they should be cut into slices and covered with vinegar. They are wholesome and nutritious.

The plant is a biennial; that is, it grows and perfects its roots in one season, and in the following spring it sends up its flower-stalk, ripens its seeds, and dies. To collect seeds, either reserve two or three of the best roots in the spot where they grow, or transplant them in autumn to a convenient situation. The flower-stems will be produced in the following spring, and it should be secured by stakes till the seeds ripen. Then cut them in stalks, and dry them on a cloth under an airy shed; separate the seed vessels, and preserve them in paper bags in a dry and cool place; the seeds will retain vegetative power for several years. Seed so obtained will produce superior roots, whilst that procured from untransplanted roots will yield very inferior ones.

To grow the Red Beet well, the ground ought to be light and pulverisable, otherwise the spindle-root will be diverted if it meet with obstacles, and become forked and distorted.

The Beet will not succeed in stiff clayey soil, nor yet in stony land; and as both are very common in the Himalayas, the best plan is to trench the plot to the depth of nine inches, removing stones, roots, and hard clods of earth; lay a stratum of mixed cattle-manure at the bottom of the trench in order to attract the root downward, and dig the manure into the ground, using a pick-axe if necessary, otherwise a hoe. Lime and manure (cattle-manure) the excavated soil, and then return the same to the trench.

The cattle-manure should be enriched by being repeatedly sprinkled over with an aqueous solution of saltpetre—eight ounces of the salt to as many gallons of water

will be sufficient; 80lb by weight of manure should be used, and the fresher the better.

To prevent repetition, we may here mention that the Beet, Carrot, and Parsnip are greatly benefited by the use of saltpetre, the potash of which is essentially necessary for the due development of these roots.

In the Himalayas, the ground should be prepared for Beet before the frost sets in, or before the 15th of October; in the plains, operations should be commenced when the rains terminate.

In the hills, the seeds are to be sown any time after the 15th of March. It should be remembered that each plant will require one square foot of space. Hence, if the plot of land be 12 feet square, there will be room for 144 plants, with 12 in each row, or 144 in all. With these figures as a guide, sow successive rows or plots (according to probable consumption), at intervals of ten days, to the 15th of May. In sowing, stretch the line, and draw an even drill, about an inch or an inch-and-a-half deep; and drop three seeds at every 12 inches, so that if all germinate, two plants may be pulled up: the seeds to be soaked in pickle, and subsequently in the cupreous solution, because insects and other enemies are apt to attack them. Cover the seed with light fine earth, and beat down gently with a spade. It will be advisable to sow a small plot with 40 or 50 seeds, to be used for transplanting in case any of the plants of the same age, growing in the drills, are destroyed by insects or accident. Keep the rows or beds entirely free from weeds by hand-weeding, the weeding-hook being made use of. The roots of the first sowing will be ready in August, and thence throughout the winter. In the plains the end of September is the proper time to commence sowing, and the

ground having been manured and duly prepared, the best plan is to lay out the plot into ridge and furrow; a clear space of from 14 to 16 inches existing between ridge and ridge, measured from the centre of their summits, on which stretch the line and make a drill as before, and put down three seeds at intervals of 12 inches, conducting all the operations as previously explained. The ridges should be fully 9 inches in height, and from 12 to 16 feet in length. By adopting this plan every Beet growing on the ridge makes vigorous downward growth, and a corresponding increase in bulk. If the weather is dry, well-irrigation may be resorted to, the water being let in at one end of the furrow and out at the other. Drenching is injurious. It has been found in practice that the presence of salt in the manure or soil acts most injuriously on the Beet; and still more so on the Sugar Beet. Hence, salt should on no account be added to the manure, nor should night-soil be employed as such, on account of its richness in culinary salt. The development of saccharine matter in the Beet and Sugar Beet will not take place in the presence of salt, and an insipid root is the invariable result if it has been used. The cultivation of the Beet-root has made great advances in England, and we give below a list of the best kinds mentioned in Carter's latest catalogue (1872):—

1. THE PERFECTION OF BEETS.—For flower-garden decoration or for salad.—Root of medium size, rich colour, and fine flavour. Foliage shining black, of dwarf and regular habit, and, unlike other Beets, the leaves show their dark colour from the seed leaf. (A prize Beet.)

2. HENDERSON'S DWARF WATERLOO BEET.—Recommended as quite distinct from any other variety.

3. CARTER'S ST. OSYTH BEET.—Medium size, good shape short top, rich deep blood-red colour, fine flavour; the best table Beet in cultivation. (Very highly recommended.)

4. DELL'S BEET.—Much recommended for flower-garden decoration.

5. BECK'S IMPROVED SEA-KALE BEET.—A delicate esculent, quite equal to Sea-Kale.

6. NEW EGYPTIAN TURNIP-ROOTED BEET.—Quite distinct from other Beet in being shaped like a fine snowball Turnip. The flesh is of very deep colour, good quality, and fine flavour.

7. NEW CHILIAN BEET (for decorative purposes).—This striking novelty is specially adapted for bedding purposes; the foliage presenting a variety of colour, from bright-orange to purplish-crimson.

8. NEW PINEAPPLE SHORT TOP.

9. SMALL SELECTED BLOOD RED.

10. NUTTING'S SELECTED DWARF RED.

11. PERPETUAL SPINACH.

12. DEWAR'S FINE DARK.

### THE CABBAGE TRIBE.

This includes some of the most hardy, easiest cultivated, and useful of kitchen vegetables. To be grown to perfection the Cabbage requires a good rich soil, and as this is not very often met with, the soil of the garden must first be limed, dug up, and highly manured. The best manure for this class of vegetables is night-soil, and after it goat and sheeps' droppings. As *mallee*s will not use night-soil, the best plan to secure an abundant supply of goat-manure is to hire a herd of goats (or a flock of sheep) for the night.

Have a good supply of pegs and ropes in readiness, and tether the animals on the land to be planted with Cabbages, Cauliflowers, &c. Supply them with green and dry fodder—and water, if they need it: the milch-goats to have grain (moh) given to them as usual. Next morning, after the sun is well up, carefully remove the goats; have the manure spread over the surface, and dug into the soil without delay,—the land to be limed immediately after the manure has been worked into it. Now spread leaf-manure or decayed leaves over the surface, and twenty-four hours after irrigate the land, but do not drench it. When the soil is sufficiently dry, dig it all over again, break the clods, pulverise, and prepare the land for planting. If the operations indicated commence after the 15th of September, the seedling Cabbages may be put down in all October.

The various kinds of seed are sown during the first week of September in boxes, and again twenty days later. The seedlings, when of sufficient size, are transplanted to a bed prepared for their reception. If the weather is sultry, the plants must be sheltered with matting or canvas, to be removed an hour before sunset, and to be replaced after 8 a.m. next morning. If insects attack the leaves, dust them with a mixture of sifted wood ashes and *chunam*. In fact, it is best to do so as a precautionary measure, and thus protect the plants before they are attacked. If caterpillars make their appearance at any time of the plants' growth, fill a common flour-dredger with a mixture of dry tobacco-leaf powder and sifted *chunam* in equal parts. Dredge this compound powder over the worms, whether they be on the upper or under-surface of the leaves. The mallee should make a daily inspection of the Cabbage

plants, and remove all leaves on which moths and butterflies have laid their eggs. In Simla, too much care cannot be bestowed on the subject, as unless these eggs and worms are destroyed, the Cabbage crop will be lost, and some others into the bargain; in the plains similar care is indispensable.

The young plants, when between four and six inches high, will be ready for planting out. As the time approaches, draw and mark rows of lines on the ground prepared for the Cabbages; let there be a space of two feet between line and line, and at every eighteen inches make a hole nine inches in diameter and between six and eight inches in depth. Have ready a sufficient quantity of dry pulverised goat-manure, which has been previously enriched by being wetted with an aqueous solution of saltpetre. Mix a good handful of this manure with the excavated soil, which replace in the hole, and so proceed with the rest; when all are ready, commence transplanting, allowing a single Cabbage, Cauliflower, or Kholekole to each hole. Water after planting, and do so daily till the plants strike and make growth.

With the exception of the Tobacco, no plant requires such high manuring as members of the Cabbage family; and when good seed fails to produce a good crop, it is a sure sign that the land has not been properly prepared.

In order that the art of Cabbage cultivation may be thoroughly understood, and the great value of this esculent be fully appreciated, we give two analyses, one of the green, and the other of the dried Cabbage leaf:—

100lb of green Cabbage leaves contain—

|                          |      |               |            |
|--------------------------|------|---------------|------------|
| Water...                 | 89lb | Gluten...     | 1½ to 2½lb |
| Fibre ...                | 1lb  | Fat, a trace. |            |
| Starch or its equivalent | 7lb  | Ash           | ½lb        |

100lb of dried Cabbage leaves contain—

|                      |      |      |                       |     |       |
|----------------------|------|------|-----------------------|-----|-------|
| Water...             | ...  | nil. | Gluten...             | ... | 14½lb |
| Fibre...             | ...  | 11lb | Fat...                | ... | ¾lb   |
| Equivalent of starch | 66lb |      | Ash or mineral matter | 8lb |       |

It has already been explained that the mineral matters of plants are extracted from the soil by the roots. The facts before us show that every 100lb of Cabbage leaves permanently remove ½lb of mineral matter from the soil, and if the soil is rich in sand (*silica*), and deficient in the other and more valuable constituents, it stands to reason that the crop must fail. The very large quantity of gluten present in the Cabbage and Cauliflower shows the necessity for employing manures rich in nitrogenous matters. Agricultural science teaches us that 100lb of cowdung, used as manure, will produce 12lb of gluten in the plant; whilst the same quantity of goats or sheep's droppings will produce 32½lb of gluten. Therefore, if the best Indian cowdung manure be used for the land under Cabbages, the inferiority of the produce may be foretold with the utmost certainty.

In the following list we have brought only the very best of their kind to the amateur gardener's notice, viz.:—

#### NEW AMERICAN CABBAGES.

1. THE EARLY WYMAN.—This variety is in great repute in the States, and is recommended for its earliness and fineness of quality.

2. THE EARLY WATERFELD.—A great favourite with New York market gardeners; very early, and sure to head.

3. COCOA-NUT CABBAGE.—Thus designated from its similarity in shape to the Cocoa-nut; very early, and of good quality.

4. ENFIELD MARKET CABBAGE.—An early variety; very highly recommended.

- |                                                |                     |
|------------------------------------------------|---------------------|
| 5. THE EMPEROR.                                | } Both early kinds. |
| 6. THE NONPAREIL.                              |                     |
| 7. EARLY JERSEY.                               |                     |
| 8. CARTER'S EARLY.                             |                     |
| 9. CARTER'S MATCHLESS.                         |                     |
| 10. WHEELER'S IMPERIAL.                        |                     |
| 11. TOM THUMB, OR LITTLE PIXIE                 |                     |
| 12. SHILLING'S QUEEN.                          |                     |
| 13. RED DUTCH LARGE IMPROVED.                  |                     |
| 14. CHOU DE MILAN.                             |                     |
| 15. COUVE TROUCHUDA.—Improved thousand-headed. |                     |

In the Himalayas, these should be sown in succession, monthly, from March to September.

#### SAVOY CABBAGES.

1. CARTER'S LITTLE PIXIE SAVOY.—Very highly recommended. Planted out 16 inches plant from plant; the ground is literally covered with small but delicious heads of from  $1\frac{1}{2}$  to 2lb each.

2. DWARF GREEN CURLED.
3. GOLDEN GLOBE.
4. NEW FEATHER-STEMMED.
5. NEW DWARF ULM.
6. NEW DWARF SPROUTING ULM.

In the hills (Simla), for early crops sow in March, and again in April-May for the main crops.

#### BRUSSEL SPROUTS

- |                           |                      |
|---------------------------|----------------------|
| 1. CARTER'S OWN-GROWTH.   | 3. SCRYMGER'S GIANT. |
| 2. IMPORTED FROM HOLLAND. | 4. DALMEN'S SPROUTS. |

Sow as before in the Himalayas, and transplant early in rich, well-prepared ground.

#### BORECOLE, OR KALE.

1. THE ACME KALE.—Very highly recommended. It is described as follows :—"It is really a superb thing, and combines every *desideratum*, being very hardy, very early, prolific, tender, mild, and a brilliant-green when boiled." The leaves of this very dwarf-curved Kale grow close to the ground; they are of a glaucous green, intersected by a scarlet midrib.

2. DWARF GREEN CURLED SCOTCH.

3. ASPARAGUS KALE.—(True.)

4. COTTAGER'S KALE.—(True.)

5. NEW FEATHER SCOTCH.

6. NEW HEADING.

7. THE ABERGELDIE KALE.

8. CARTER'S IMPROVED GARNISHING KALE.—The colours of the leaves vary from rich crimson to white, laced and fringed.

In the Himalayas sow in March for early, and in April for main crops.

#### BROCCOLI.

1. CARTER'S CHAMPION BROCCOLI.—M. Saul, in *The Florist and Pomologist*, reports on it as follows :—"One of the best, if not the best, late Broccoli in cultivation, and a most useful auxiliary, where a large supply of vegetables is required."

2. CARTER'S SUMMER BROCCOLI.—This variety is very distinct from all other sorts in the seed, foliage, and heads. It is generally fit for use in July (May-June in the hills)

thus filling up the gap which at one time existed between Broccolis and Cauliflowers.

3. SNOW'S WINTER WHITE BROCCOLI.—The true variety, which heads and is fit to eat at Christmas.

4. EARLY WHITE CAPE.

5. WALCHEREN.

6. IMPERIAL WINTER.—The three last will be fit for cutting from September to December.

The Broccolis fit for cutting in December and January (in the hills understood), besides snow winter, are :—

1. THE EARLY PENZANCE.

2. BECK'S EARLY GEM.

3. BACKHOUSE'S WINTER WHITE.

The Broccolis fit for cutting in spring (hills and plains), from February to April, are :—

1. ADAM'S EARLY WHITE.

2. DAUGER'S PINK CAPE.

3. EARLY PURPLE SPROUTING.

4. DILCOCK'S BRIDE.

5. MILLER'S DWARF WHITE.

6. NEW READING GIANT.

7. NEW WHITE SPROUTING.

8. KNIGHT'S SELF-PROTECTING.

9. FROGMORE PROTECTING.

10. SOUTHAMPTON FINE WHITE.

The Broccolis fit for cutting in summer (in the Himalayas only), or May to July, are :—

1. CARTER'S CHAMPION.

2. CATTLE'S ECLIPSE.

3. CONNING'S RELIANCE.

4. CARTER'S SUMMER.

5. GARROWAY'S LATE WHITE.

In the Himalayas, the sowing of Broccoli seed should commence about the first week in April for late spring use. Sow the late sort between the 10th and 15th of May, and sow Walcheren in the last week of May, and again in

August. In the plains there can be no spring sowings whatever; and the only way of securing any of the earlier kinds would be to sow in boxes in August, and to plant out in September, during which month, and, say, to the 15th October, the other kinds should be sown at short intervals.

#### THE CAULIFLOWER.

In the plains, all kinds of Cauliflowers are sown between September and October; and they come into season in December, and last to the end of February. In the hills (Simla), we have had Cauliflowers on our table throughout November and part of December, and again in all April and May. We sowed the seed in boxes (kept under shelter) in August, and planted them out in September, and they thrive well. If a hot-bed be available (in the hills), make a sowing in pans in February and March, to be pricked out in April for an early crop, and sow again in April and May for succession, if protected Cauliflowers will last through the winter, and in such case the seed will have to be sown in August. The rains, beetles and caterpillars, generally destroy Cauliflowers and Cabbages in the hills; therefore the best plan will be to use the plants sown in May as greens; in this state they are most delicate eating.

The following are the choicest of their kind, viz. :—

1. CARTER'S DWARF MAMMOTH CAULIFLOWER.—Very dwarf, hardy, with firm white heads; stands drought well,—in fact this variety has become an universal favourite.

2. VEITCH'S AUTUMN GIANT CAULIFLOWER.—This new and extremely valuable variety is perfectly distinct from any other sort. The leaves are long and tapering, and the habit of the plant is robust, but very upright and compact.

The heads are magnificent, beautifully white, large, firm, and compact, and, being thoroughly protected by the foliage, remain longer fit for use than any other sort.—(A prize Cauliflower.)

3. EARLY DWARF EFFORT.
4. EARLY LONDON.
5. FINE LARGE LATE CAULIFLOWER.
6. FROGMORE FORCING.
7. STANDHOLDER OR GIANT.
8. WALCHEREN.
9. LENORMAND'S PARIS.

The Cauliflower is indigenous to the Punjab, and, with suitable manuring and cultivation, its size and flavour would be greatly increased. The imported autumnal kind mentioned will thrive in the North-Western Provinces and Punjab, but not the spring varieties, the culture of which must be confined to the Himalayas.

### CARROTS.

The Carrot requires a deep light soil, the land to be prepared and manured as described for Beet-root. If the soil is stiff, apply a sufficient quantity of sand, and dig and work it into the soil. In the hills the cultivation of the Carrot in ridges well repays any extra trouble; the seed should be sown from four to six inches apart, according to the size of the variety. The sowings may commence (snow and weather permitting) in February for the early kinds, and in March, April, and May for the others. For the late crop, sow between 10th and 15th of June, so as to have the plants above ground before the true rains set in; and again about the 20th of August, if there

is a break in the weather. As Carrots bear transplanting very well in the hills, the extra plants removed from the ridges should never be thrown away. They may be put down wherever six inches square of space can be found, and may be sold for a fair sum. The Carrot is in great demand for soups, stews, and made-dishes, for which the small roots answer admirably; the ridge-grown, or superior crop, being reserved for a separate dish.

The amateur gardener should make it a rule to see the Carrot seed sown in his presence, otherwise country Carrot seed of known inferior quality will be sown, and the *mallee* will sell the superior seed to his friend—the market gardener. The inferior seed runs up into stalk and flower, and the *mallee* brings the fact to his master's notice, who vents his wrath on the London seedsman, whilst the real culprit is not even suspected. We would recommend all Carrot seed being soaked for an hour in pickle, then mixed with sifted wood ashes and sown by threes. If the land will admit of the seed being sown broadcast, mix the prepared seed (after being ash-dried) with sand and coarse charcoal dust, and then sow the plot sown and well raked over. These precautions will ensure a genuine crop. The seed may be saved by planting a few of the best Carrots to stand the winter. Carrot seed above a year old will not germinate.

In the plains, the early kinds should be sown at intervals of eight or ten days in September, and the other sorts in all October. To preserve Carrots for future use, take them up when fit for the table, and, without washing or scraping the roots, store them in boxes as follows:—Spread some dry straw on the bottom, and over it two inches of dry, finely pulverised soil; on it lay down a layer of Carrots, sardine-fashion, heads and tails. When the work

is completed, spread the same depth of soil over the Carrots, and put down a second layer, and so on till the box is filled, when put straw over the last course of soil and nail down the lid. Before packing the Carrots, cut away the green leaves down to the crown, but take care not to cut the crown, or the upper part of the Carrot. By following this plan in the hills, the Carrots taken up in May will be kept fit for use till the late crop is ready, and the Carrots stored in winter will last till the spring crop is ready. As these roots will always realize four annas a seer when out of season, the trouble taken in their preservation is money exceedingly well laid out, and will pay a good share of expenses. In India, it is the custom to feed horses, milch-cows, and milch-goats with Carrots, under the impression that in the latter case the milk will be increased and improved, and in the former, the animal will be benefited in every way. A perusal of the following analysis will show the low value of the Carrot as cattle food :—

100lb of the best Carrots of their kind contain—

|                   |    |      |                     |           |
|-------------------|----|------|---------------------|-----------|
| Water...          | .. | 87lb | Gluten              | 3 to 14lb |
| Husk or skin      | .. | 3½lb | Fat, a trace.       |           |
| The equivalent of |    |      | Ash or mineral mat- |           |
| starch            | .. | 7lb  | ter                 | 3lb       |

The common village Carrot grown by the ryots probably does not contain above ½lb of gluten in 100lb of roots, which gives 35 grains of gluten to the pound of Carrots.

The Carrots held in the greatest estimation by the English market gardener are as follow, viz—

- |                        |                      |
|------------------------|----------------------|
| 1. THE EARLY HORN.     | 4. LONG SURREY.      |
| 2. EARLY SHORT FRENCH. | 5. SELECTED SCARLET. |
| 3. JAMES'S SCARLET.    |                      |

And after these come the LONG ORANGE, the INTERMEDIATE, and the ALTRENCAM.

### THE PARSNIP.

The Parsnip grows remarkably well in the Himalayas, and would no doubt succeed in the northern stations of the Punjab. It is a taper-rooted vegetable, resembling the Carrot in shape, and, when cooked, is much relished with salt-fish and salted meats. We quote, but are not responsible for the following, viz. :—"It is used in the preparation of soup, of a species of marmalade, and in the manufacture of a wine which is said to approach nearest the *malmsey* of Madeira and the Canaries than any other. It is also an excellent agricultural as well as horticultural vegetable, and is extensively grown for cattle on the Continent."

The Parsnip is not liable, like the Carrot, to be injured by severe weather, and its flavour is decidedly improved by the action of frost. If taken up before the snow falls, or before Christmas, and properly protected, the roots will continue good till May in the following spring. To the permanent resident and European settler in the Himalayas the value of the Parsnip is very great, and with a stock of field Parsnips in store they may frustrate the combinations of the hillmen (*paharees*) who, when the snow is on the ground, demand absurd sums of money for bundles of oak leaves and mill grass.

The Parsnip requires a rich, deep soil, trenched and manured as if for a crop of Beet-root. The seed is sown in drills a foot asunder. The period of sowing is comprised between the last week of February (weather permitting) and the second week of May. On thinning out, let the remaining plants be nine inches apart in the row.

The best garden Parsnips are as follows, viz. :—

- |                       |                         |
|-----------------------|-------------------------|
| 1. THE FINE SELECTED. | 3. THE IMPROVED JERSEY. |
| 2. THE STUDENT.       | 4. NEW PARSNIP CHERVIL. |

The Cattle Parsnips are—

1. THE HOLLOV CROWNED.—The best.
2. THE LARG JERSEY.—A great cropper.
3. THE LARGE CATTLE.

Sow 6lb of seed per acre.

100lb of Parsnips contain—

|       |     |      |        |     |      |
|-------|-----|------|--------|-----|------|
| Water | ... | 82lb | Gluten | ... | 1½lb |
| Skin  | ... | 8lb  | Fat    | ... | ½lb  |
| Sugar | ... | 7lb  | Ash    | ... | 1 lb |

In the hills we would recommend seed being given to a zemindar to sow under contract, i.e., if the resident has not sufficient land for the purpose,—the entire crop to be purchased at a fair rate.

## THE ONION TRIBE.

This savoury class of kitchen vegetables comprises the Onion, Leek, Garlick, and Shallot. All are natives of eastern countries, but they grow to great perfection in Italy, and also in the British Islands. In India, the cultivation of the Onion is very imperfectly understood, and, as a natural consequence, the superior imported varieties either degenerate, or, by being pulled up for use before they are even half-grown, cause considerable disappointment. In 1870, we obtained some seeds of the GIANT WHITE TRIPOLI ONION, samples of which had weighed over 9lb. The seeds germinated very freely, and were planted out in August; in December the roots were two inches in diameter, and in March they were over three inches. We left Simla on the

29th of that month, and subsequently heard that, being considered full-grown, all were ruthlessly pulled up by the *mallee* for kitchen use.

We have mentioned this circumstance to show that Onion seed received overland (by letter-post), and sown in boxes in July, was fit to transplant in August, notwithstanding the opinions of the *mallee*, who, being accustomed to make sowings in October-November, predicted an utter failure.

The value of the Onion as an article of food is as little understood as its cultivation, and this most nourishing esculent, instead of being used as a vegetable, is treated as a spice or condiment. The matured Onion, baked, boiled, roasted, or stewed, is very palatable, and as the dried roots contain from twenty-five to thirty per cent. of gluten, its nourishing powers are great; but what makes the Onion still more valuable is its restorative power. It is rich in sulphur and the food phosphates, and, if eaten with bread and salt, will sustain and support human life from year to year.

To grow the Onion successfully, the soil should be rich, light, and deep, and well exposed to the sun. The application of sand and leaf-manure are indispensable, and after they have been well dug in calcareous manure mixed with bone-ash should be freely applied, and finally goat or sheep's droppings enriched by aqueous solutions of sulphate of iron and saltpetre. These substances having been sufficiently incorporated with the well-dug soil, water or irrigate the land, and, when sufficiently dry, mark it off into drills, just so deep as to be clearly discernible,—the drills to be from six, nine, to twelve inches apart, according to the description of Onion to be grown; the

Onion seedlings (of which presently) to be put down in the drills in rows, at intervals corresponding to the size of the Onion. Thus, the White Giant Onion will require twelve inches of space between plant and plant and as much between the rows, whilst the small Button or Pickle Onion will not require more than two inches between plants and six between rows. This minimum space is needed for feet room, when the plots are being weeded. We may here mention that seeds are sometimes sown along the course of the drills and covered over with pulverised soil; when the plants are above ground, they are thinned out. This plan is very wasteful, and the pulling up disturbs the roots of the plants left. The Onion seed should be sown in boxes, in finely pulverised garden soil, prepared *secundum artem*. The box and soil being ready, empty the parcel of Onion seed into a soup-plate. Have a kettle of boiling water ready on a brazier, pour boiling water over the seeds till the plate is full, and allow it to cool down till lukewarm, by which time every sound Onion seed will have germinated. Pour off the water, and drain the seeds on a cloth; have ready some sifted wood-ashes, strew them on a plate, and on them place the seeds; sprinkle ashes over them, cover with another plate, and shake up the contents gently together. The seeds are now ready, and should be sown at once. The young plants will come up very speedily, and will thrive apace. When sufficiently advanced, prick them out into a bed which can be sheltered from the rain, and, when between three and four inches high, transplant them to the Onion bed. The seedlings so produced will have a start of fully fourteen days (and often more) over seed sown in the usual manner, and the plants will take and keep the lead to the end. In the

rains, Onion seed sown in the open will swell and rot. In September, Onion seed may be safely sown in the open, being treated as before; but for the spring sowings in the hills, the seeds must be sown in boxes after the 15th of February, to be pricked and planted out in all March. In the plains, for an early crop sow in boxes in the beginning of September, and plant out as soon as the weather is set fine; and for the late crop, sow in all October. By adhering to the hot-water plan, all disappointment is avoided, as bad or spoiled seed will not sprout, whilst every good seed will invariably do so. On this point we speak from personal knowledge. The Onion forms its bulb in the first year of its growth, and the flower and seed in the second year. These small Onions will very often produce a flower-head, which, as soon as it is fairly visible, is to be pinched off. Another attempt will be made, and that also must be frustrated. The natural course of the vital fructifying sap being thus interrupted, will be diverted to the bulb, which will increase accordingly. When the bulbs are full-grown, twist their necks, and take up the crop when the leaves become yellow, and expose the Onions to the sun and air under a shed till they be externally quite dry, when store in a dry place. All kinds of Onions are called *Peeauj* by the people of India and those mentioned in the following list are the best of their kind:—

1. GIANT WHITE TRIPOLI ONION.—Specimens of this magnificent Onion were exhibited at Oxford, and four of the heaviest roots turned the scale at 9lb 3oz. each. Sow in July and August in the hills. (A prize Onion).

2. NEW NEAPOLITAN MARZAGOLE ONION.—This is by far the earliest Onion in cultivation. It is a beautiful silvery-white-skinned variety, and a capital keeper, and possesses

every quality for flavour to make it a great favourite for culinary purposes. In the hills, it may be sown in February or March (at discretion), and its rapid growth will produce a splendid crop early in the year. It may also be sown as an autumn Onion in July, and the crop will come into use late in the same season. (A prize Onion.)

3. **EARLY WHITE NAPLES ONION.**—A distinct variety, of quick growth and mild flavour. The specimens exhibited in June, 1870, weighed 3lb 7oz. each. (A prize Onion.)

4. **LARGE ITALIAN RED TRIPOLI ONION.**—Its flavour is exceedingly fine and mild. The samples exhibited weighed from 2lb 6oz. to 2lb 11oz. each. In the hills sow in March. (A prize Onion.)

5. **NEW GIANT ROCCA ONION OF NAPLES.**—A splendid variety of Onion, of delicate flavour, large globular shape, and light-brown skin. If sown in the spring (March), this variety will produce larger Onions than any spring sort. Some of the bulbs exhibited, weighed 3lb 9oz. (A prize Onion.)

6. **NASBEY MAMMOTH ONION.**—A magnificent Onion, with a fine skin of a bright-yellow colour; superior in size, flavour, and excellence to the best White Spanish Onion. (A prize Onion.)

7. **THE COVENT GARDEN PICKLING ONION.**—The true variety, producing small Pickling Onions. (Very highly recommended.)

8. **THE TRUE NOCERA ONION,** or small French Pickling Onion. (Very much esteemed in France.)

9. **NEW INTERMEDIATE ONION.**—This is a distinct sort, and produces a greater weight per acre than either Globe or White Spanish; form like an Orange.

10. **DANVER'S YELLOW ONION.**

## 11. NUNEHAM PARK ONION.

## 12. NEW WHITE INTERMEDIATE ONION.

These three last named are highly recommended for field culture, and are remarkable for producing a greater weight per acre than other (field) kinds. These would answer well in the plains, where a superior description of Onion is much needed and would be highly valued. The other kinds specially recommended for field culture are:—

THE BLOOD RED.

THE RED MAMMOTH TRIPOLI.

THE WHITE GLOBE.

JAMES'S KEEPING ONION.

THE LISTON.

THE NEW GIANT MADEIRA.

THE NEW QUEEN.

THE STRASBURG.

THE WELSH.

All these kinds would answer well in the plains, being sown in the second week in September to stand through the winter,—the crop to be gathered in all March.

## THE LEEK.

The Leek (*Allium porrum*)—called by *mallees* *Lik Peeauj*—if properly treated in a favourable soil and situation, grows to a very large size. It is a plant which is much improved by transplantation, but yet can be grown very well in its seed-bed. In the Himalayas, sow the seeds in a shallow drill on or after the 20th of March, and cover them with half-an-inch of fine soil. When the seedlings are above ground, thin them out to stand three inches asunder, and at the second thinning, take out intermediate plants, so that the plants left in the seed-bed will stand six inches asunder. These will yield a crop of fine middle-sized Leeks in the succeeding autumn.

To transplant Leeks, prepare a bed in May-June, to contain four or six rows nine inches apart; and manure the

soil richly, as if for Onions. When ready, make holes along the intended line six inches deep and as far apart. In each hole plant a strong, well-grown Leek taken from the seed-bed, and put in a double handful of old cowdung manure; before filling in with the excavated soil, water the plants without delay, and again three days after, which will suffice. Under favourable circumstances, Leeks of large size and most excellent quality will be forthcoming in the autumn and thereafter.

The best kinds of Leeks are as follows:—

- |                       |                               |
|-----------------------|-------------------------------|
| 1. THE HENRY'S PRIZE. | 3. MUSSEL-BURGH.—Large.       |
| 2. LONDON FLAG.       | 4. THE AYTON CASTLE<br>GIANT. |

#### THE SHALLOT.

The Shallot (*Allium ascalonicum*) is a native of Palestine, which grows remarkably well in the Himalayas. Its culture is precisely the same as that of the Garlic. Sow in March-April. The small Onion-like bulbs are the parts eaten.

#### THE GARLIC.

The *Lussoon*, or Garlic (*Allium sativum*), is one of the most pungent species of *Allium*. It is increased by dividing the bulbs into cloves, and planting them into good sandy loam in the Himalayas, at any period between the middle of February and the end of April. Draw drills two inches deep and nine inches apart, then press the root end of each clove firmly into the soil till it stands erect; let the distance between each be six inches, and fill up the drills with sand or pulverised silicious soil. Keep the bed free from weeds,

and when the leaves turn yellow in July-August, take up the bulbs with a hand-fork and store them in a dry room. In the plains, sow as above in September-October.

The Garlic is very rich in sulphur and the combinations of phosphorus; hence, to grow it to perfection, the compost used should be enriched with bone-ash saturated with an aqueous solution of the sulphate of iron made as strong as possible. The best plan is to dissolve 1lb of copperas in 2lb of boiling water, and add thereto 5lb of bone-ash in powder; mix well together, pour in a pint of water, and give it a boil, stirring the mixture; now reduce the fire, and allow the water to evaporate; after which dry in the sun, reduce to powder, and keep in tins for use. One tea-spoonful of this compound will be sufficient for each plant, and should be mixed with a handful of dry pulverised goat or sheep-manure.

The Garlic, in addition to being very nourishing, acts on the blood and opens the sudorific pores of the skin. The cloves should be boiled, till tender, in milk; this will reduce the taste or flavour of Garlic to a minimum, and prevent the breath and perspiration from smelling of it. The Garlic thus prepared is very palatable, and may be eaten as a vegetable, seasoned with butter, pepper, and salt; or it may be mashed into the invalid's soup, and be used to flavour the gourmand's ragout. It promotes a secretion of bile, and improves digestion.

The ancient Egyptians worshipped the Garlic. The ancient Hebrews felt its want so much, that they murmured against Moses because no Garlic was forthcoming in the wilderness. The ancient and modern date-eating Arab employs the Garlic as a remedy for fever and its attendant thirst. A clove (raw) of Garlic is gently bruised, and some powdered

salt is strewn over it. The prepared clove is placed under the tongue, and the saliva swallowed as generated. The exhausted clove may be swallowed or rejected, its place being taken by another. The action of the Garlic is obvious. The phosphate of potash present acts on the salt, and converts its soda into phosphate of soda, setting its chlorine free. The soda phosphate, on being taken into the circulation, immediately acts on the blood, and absorbs superfluous carbonic acid gas therefrom; the blood is cooled, and the fever abates. The chlorine, cutaneously thrown into the circulation, disinfects the system, and the patient is cured, because the fever, or what causes it, is arrested, neutralized, destroyed, and expelled. The Arab knows nothing of all this, yet he uses the very substances which modern science teaches us would have the desired effect. A consideration of all the facts will show that the properly cultivated Garlic is of very considerable value to man, both as nourishing, restorative food and medicine.

#### CHIVES.

The *Guddeena*, or Chives (*Allium schænoprasum*), is a common Indian vegetable known to every mallee. The thin, awl-shaped, Onion-flavoured leaves are the parts of the plant used in cookery. It is propagated by division of the roots in September and October. The green leaves, chopped fine, give the flavour of the raw Onion to salads and beefsteaks; and when added to omelettes, soups, seasoning for poultry, and made-dishes, it gives the flavour of the cooked Onion, but not the nourishment.

### THE ARTICHOKE.

The Artichoke (*Cynara scolymus*) has no Hindee name, but is known to cooks and *mallees* by the corrupted English word *Hau-tee-chuck*. It is cultivated in almost every Indian garden in the hills and plains. It is easily raised from seed sown at any time between the end of July and the beginning of September in the plains, and March-April in the hills. The best and most expeditious plan is to produce it by offset suckers, which are produced freely by the parent plant. These will bear within six months of being put down in good soil which has been well dug and manured.

The best kinds are:—

- |                    |  |                     |
|--------------------|--|---------------------|
| 1. CARTER'S GREEN. |  | 2. CARTER'S PURPLE. |
|--------------------|--|---------------------|

### THE CARDOON.

The Cardoon (*Cynara cardunculus*) has no Indian name. "The seeds are sown at the same time and in the same manner as those of the Artichoke. When the young plants are about nine inches high, they are put out at the distance of three feet apart, in ground that has been well enriched with manure. They are then treated much in the same way as Celery. When the vegetable has become blanched by being earthed up, it is ready for use, and is taken up and stewed like Sea-kale."—*Firminger*.

Mr. Carter, of London, says: "Sow in May, in trenches prepared as for Celery." Therefore the proper time for sowing in the Himalayas would be in March-April. The finest kind is CARTER'S NEW LARGE PURPLE CARDOON; the common is the SPANISH CARDOON.

### THE CELERY.

The Celery (*Apium graveolens*) has no Hindee name. The *mallees* call it *Sul-laeree*, which is a corruption of the English word. In the Himalayas, for earliest crop sow in February or March, according to the state of the weather; and when the plants are sufficiently grown, transfer them to trenches in May: for main crops sow in April, and in May for late crops. The trenches should be filled with rich manure, in which saltpetre and soda (bazar *sujjee*) should be freely present. It is a great mistake to earth up immature plants; the proper plan (Sir J. Paxton's) is to allow them to grow to maturity before this is resorted to, when it takes about fourteen days to blanch them perfectly. The finest kinds of Celery are as follow, all being prize-takers, viz. :—

1. CARTER'S INCOMPARABLE DARK CRIMSON.
2. THE PRIZE-TAKING WHITE.
3. SEALEY'S LEVIATHAN.
4. COLE'S DEFIANCE RED.
5. COLE'S CRYSTAL WHITE.
6. HOOD'S IMPROVED DWARF RED.
7. INCOMPARABLE DWARF WHITE.
8. GOODWIN'S SOLID WHITE.
9. READ'S MATCHLESS RED.
10. LAING'S MAMMOTH RED.
11. MANCHESTER GIANT RED.
12. THE SANDRINGHAM DWARF WHITE CELERY.

The last, being exclusively served at Sandringham is the most fashionable kind of Celery; but the eleven other kinds are very extensively cultivated and consumed.

The large-rooted Celeriac, also called the Turnip-rooted Celery (*Apium graveolens* var. *Rapaceum*), is cultivated

in the same way as Celery, but it requires neither earthing up nor blanching to render it fit for use. The part eaten is the root, which is developed by cultivation to a large size, and having then a very agreeable Filbert-like flavour, it requires liberal watering. The constant failure of the Celery in the plains is due to the absence of mineral matters in the manure—hence the necessity for using saline manures. The sick and weakly are benefited by eating Celery, which replenishes their system with the alkalis and alkaline earths.

### THE LETTUCE.

The Lettuce (*Lactuca sativa*) is called *Sul-laud* (*Anglice*, salad) by the *malices*.

There are two kinds of Lettuce—the Cabbage-Lettuce, and the long upright kind, called the Cos-Lettuce. For sweetness and tenderness, the Cos, when in perfection, will perhaps be the favorite. This kind affords also a very delicious dish when stewed, and is excellent when boiled like Cabbage. The Lettuce is greatly benefited by the use of saline manures, and when so raised, it is quite a different thing from the usual watery vegetable grown on poor soil and manured with exhausted cowdung. Like Celery, the Lettuce takes up a considerable proportion of mineral matters from the soil, and is therefore valuable for the sick, who may eat it with advantage in any cooked state.

In the hills we have grown Lettuces in all seasons. The process is simple.

In spring culture, sow every month in very shallow drills of fresh dug ground, made extremely rich with proper manure. Strike the drills a foot apart, and as the

plants rise, thin them—to stand in regular order—first to two inches, then for table use as small salad, next thin to six inches, and for the larger sorts finally thin out to one foot. Remember never to transplant during spring and summer, as the plants, by removal, sustain a check, which urges them to fly up to seed. Spring and summer Lettuces are sown from February to July.

In September, two small sowings should be made of the hardy sorts, to come in use during late winter and spring. Some Lettuces heart freely; those which do not, should be assisted by passing a string of bast round them from the middle upwards. This bandage must not remain many days, otherwise the plant will run to seed and become bitter.

In autumn culture, sow in August, in drills pretty close together, for the express purpose of transplantation in September or October; they will not then run up to seed. When the plants are three inches high, thin out half of them, and transplant some into beds facing the course of the winter sun; and put others under a frame, protect by coverings and mats those in the open ground, and thin them out early in the spring. The plants in the frames will rarely fail.

To save seed, transplant some of the finest Lettuces when about half-grown, they will produce a flower stalk; and when the down of the seeds becomes visible, cut off the upper portion of the stalk and dry it in a warm and airy room: thus save all the seed as it ripens in succession, for it is very valuable.

In the plains, the winter as well as the summer kinds are sown in October, and the want of success is the result.

The following is a list of choicest kinds, prize-takers only being selected, viz. :—

*Cos varieties.*

- |                                          |                                |
|------------------------------------------|--------------------------------|
| 1. CARTER'S NEW GIANT<br>WHITE.          | 5. BERKSHIRE BROWN.            |
| 2. CARTER'S GIANT BROWN.                 | 6. BUNNEY'S INCOMPAR-<br>ABLE. |
| 3. DUNNETT'S GIANT BLACK<br>SEDEED BATH. | 7. PARIS GREEN.                |
| 4. LONDON WHITE COS.                     | 8. PARIS WHITE.                |
|                                          | 9. SUGAR LOAF.                 |

*New Cabbage varieties.*

- |                        |                         |
|------------------------|-------------------------|
| 1. ALL THE YEAR ROUND. | 4. SILESIAN BROWN.      |
| 2. DRUMHEAD.           | 5. VICTORIA.            |
| 3. HARDY HAMMERSMITH.  | 6. WHEELER'S TOM THUMB. |

THE ENDIVE.

The Endive (*Cichorium endivia*) should, for early crops (in the hills), be sown in April-May; and for succession, from 15th of August to 15th September. When sufficiently grown, transplant from the seed-bed into warm or sunny situations, and give ample protection to the late crops for spring use. In the plains, the seed should be sown between the 10th and 15th of October, and transplanted at discretion.

When the plants have completed their growth, they should be blanched in the usual manner. The Batavian Endive, however, requires a bandage at all times, otherwise its harsh green leaves will be useless, and the central heart, which alone is edible, will never be rendered tender and white. The soil should be prepared as prescribed for Lettuces.

The best kinds of Endive are as follow :—

1. MOSSY CURLED EXTRA FINE FRENCH.
2. DIGSWELL PRIZE ENDIVE.

And the next best are—

|                        |                      |
|------------------------|----------------------|
| THE BATAVIAN GREEN.    | GREEN CURLED WINTER. |
| THE BATAVIAN IMPÉRIAL. | THE WHITE CURLED.    |

### CORN SALAD.

The Lamb's Lettuce, or Corn Salad (*Valeriana locusta*) bears blue flowers in April and June, and the young shoots are eaten as a salad. For summer salading, sow once a month, beginning in March, and again in August and September for main crops. Cut the plants for use as soon as they are large enough; this the taste will determine: but they should be taken very young, otherwise they become rank. Soil as for Endive. The Corn Salad is indigenous to Britain and Italy, and the seeds supplied are accordingly named the "English" and the "Italian."

### THE CUCUMBER.

The Cucumber, or *Kheera* (*Cucumis sativus*), is indigenous to India, and grows better in the Himalayas than in the plains. In the hills, it is treated as a climber, and reared accordingly; but in the plains, the *mallees* spread a good layer of straw on the ground, over which the plant creeps, and in due time bears fruit. The reason given for this procedure is, that the sun and hot winds, or *loo*, would kill the young Cucumbers, if the plant was allowed to climb up branches placed in the ground for the purpose.

In the hills, imported Cucumbers of all kinds are successfully grown during the spring and summer; but there are no winter Cucumbers, as the conveniences needed are unknown. In the plains, however, I see no reason why the winter varieties should not answer if sown in September-October in rich soil, liming being indispensable. If beetles and insects attack the growing plants, dust them with the tobacco powder, and fumigate with tobacco or chili-smoke. Use dry goat-manure reduced to powder, and enrich it with the iron solution.

The plants should be treated as climbers. Out of thirty-two kinds of Cucumbers (frame varieties), we have selected twelve, and of these the ones marked with an asterisk are best adapted for winter growth:—

1. THE MARQUIS OF LORNE CUCUMBER.—A splendid Cucumber; pronounced to be the best flavoured and most prolific variety under cultivation. It grows rapidly, and is considered fit for table use when  $1\frac{1}{2}$  inches in diameter and  $26\frac{1}{2}$  inches in length. This is considered a young Cucumber, the fully developed fruit measuring in length from 35 to 37 inches, and being perfect in flavour. This superb vegetable was the result of a cross between the “Invincible” and the “Needle Gun” Cucumbers, the latter being the male parent.

2. THE BLUE GROWN CUCUMBER.—Very handsome fruit, average length two feet; most prolific; colour dark-green, covered with a beautiful bloom.

3. THE TELEGRAPH CUCUMBER.\*—This is a very prolific variety, 40 ripe fruits having been taken off one plant for seed. Fruit 18 inches in length; colour medium-green, with smooth skin. These three kinds are established prize-takers.

4. CARTER'S CHAMPION.\*

5. THE INVINCIBLE.
6. HAMILTON'S NEEDLE-GUN.
7. THE COLESHILL.\*
8. LORD KENYON'S FAVOURITE.\*
9. THE SION HOUSE.\*—(Improved.)
10. HAMILTON'S BRITISH CHALLENGE CUCUMBER.
11. SWADLING'S BERKSHIRE CHALLENGE.\*
12. PERFECTA.

The hardy ridge varieties are :—

- |                   |                   |
|-------------------|-------------------|
| 1. THE STOCKWOOD. | 3. LONG PRICKLY.  |
| 2. LONG RIDGE.    | 4. SHORT PRICKLY. |

### THE ASPARAGUS.

The Asparagus. (*Asparagus officinalis*) is indigenous to the Himalayas, and is to be met with from the first range of hills at Kalka, on the Simla road, to the hills above Rampore, the capital of Busahir. We forget the *paharee* name of the plant, but the esculent is known to all *mallees* as the *Pala-girans*; and as we have obtained shoots half-an-inch in diameter from wild plants put down in manured land, the cultivation of the imported kinds should be a success. The seed supplied to us from Calcutta always failed to germinate; we would therefore recommend seeds being obtained direct from England by letter-post. They should be packed between layers of cotton or wool, cut to the size of an envelope, and then enclosed in an oiled silk wrapper, to be placed within a cloth-lined envelope, and forwarded by the overland mail so as to reach India in the cold season.

In the hills, the proper time for sowing Asparagus seed (imported) is early in April. Sow in drills, the soil being well

manured and trenched. The seedlings must not be transplanted till they are one year old.

The future Asparagus bed should be prepared in October-November; it must be limed and liberally manured. Ten days before the seedlings are removed, the land should be salted, one chittack of finely pulverised salt being allowed to each square yard of soil. Mix this quantity of salt with twice its weight of pounded and sifted brick-dust (*soorkhee*), and moisten the mixture with hot-water, holding saltpetre in solution; when dry, add as much pulverised soil, mix, and run through a coarse wire sieve,—the six chittacks of compost to be strewn by hand over the square yard of bed, the extent of which in square yards being known, the corresponding quantity of compost should be made up and applied as explained. This done, rake the surface soil, and let it rest till the plants are ready, when take them up carefully and put them down three feet apart. In the hills these will come into bearing in twelve months. Some gardeners do not transplant till the plants are two years old; therefore, if any one-year plants are over, they may be left till next year. In cultivating the Giant Asparagus, the London market gardeners allow “a very large cart-load of rotten dung to about every ten square feet, trench it two spit deep, and loosen the bottom. The dung and the earth are to be well mixed together. When the land is ready, draw drills six inches deep and sixteen inches from the first row to the second that will form a bed, and ten inches between each plant in the row. Do not raise the beds till they have been planted one year; then put on about four inches of mould, and cut till the 10th of May.”

If the Asparagus bed is kept well manured, it will last for twenty years (in England); and Grayson, who, in 1830,

first produced the Giant Asparagus, recommends "that they should never be cut later than the 4th of June." He adds—"let them be eight feet in the clear from bed to bed, so that you may crop between them and lose no land."

The use of mineral matters with goat and sheeps' droppings renders the application of an excess of rotten manure unnecessary.

The analysis of M. Solly shows that 10,000lb of fresh Asparagus contain—

|                              |             |  |                 |           |
|------------------------------|-------------|--|-----------------|-----------|
| Water                        | ... 9,210lb |  | Organic matters | ... 735lb |
| Mineral or inorganic matters |             |  | ...             | 55lb      |

And as the organic matters consist of carbon, oxygen, hydrogen, and nitrogen, with a proportion of sulphur and phosphorus, it stands to reason that the manure, which contains most of these substances, should be used in preference to those which contain the least.

The Himalayan Asparagus is capable of very great improvement, and old plants put down when the rains commence will bear next spring. By adopting this plan, a supply may be secured for the table whilst the imported kinds are attaining maturity.

In the plains, the seed should be sown just before the rains cease, or between 15th August and 10th September, the culture being as before.

The three following kinds of Asparagus are prize-takers—an honor to which the original Giant is no longer entitled:—

- |                          |                        |
|--------------------------|------------------------|
| 1. GIANT PARIS.          | 3. CONOVER'S COLOSSAL. |
| 2. LARGE EARLY BATAVIAN. | 4. GIANT ASPARAGUS.    |

## THE PARSLEY.

This plant is called *Peetur-sælee* by the *mallees*, the word being a corruption of the botanical name *Petroselinum sativum*. There are several species and varieties of Parsley in cultivation; these are the plain and curled-leaved, and the common and broad-leaved or Hamburg Parsley. Preference ought to be given to the curled-leaved Parsley. This vegetable is one of the most easily cultivated, and will long keep the ground with little trouble. In the Himalayas, it is sown in drills (any time after the 15th of March), in any spare patches of border, and lies long in the ground before springing, and arrives at maturity the next season. When it has obtained this state, sprigs may be taken from it when required. It is not killed by either frost or snow. When it becomes rank, it should be rooted out and fresh Parsley sown. In the plains, from the 10th to 20th September is the proper time for sowing Parsley seed, which, under a warmer sun, germinates in ten days. The plants, when three or four inches high, may be planted out in a row, nine inches apart, in a shady place, and should be watered once a week. About March the plants will yield seed, some of which should be sown at once for a fresh supply of plants for use during the rains.

The Parsley is very rich in organic and mineral matters, hence the necessity for applying both mineral and saline manure to the land previously enriched with sheep or goat droppings. The coarser kinds afford the very best of green food for all young animals; the bone or osseous growth of colts, fillies, calves, lambs, kids, rabbits, and poultry being especially benefited by its use. The seeds might be sown broadcast in every compound in the plains, and in due time the grass and Parsley would yield an abundant supply of food for the "regimental mutton club," and for the grower's horses,

cows, goats, and sheep, if he was a non-military member of society.

According to the analysis of M. Solly, 10,000lb of fresh Parsley contain—

|                              |             |                 |             |
|------------------------------|-------------|-----------------|-------------|
| Water                        | ... 8,430lb | Organic matters | ... 1,299lb |
| Inorganic or mineral matters | ... 271lb   |                 |             |

These figures are very instructive, and by referring to them as a standard of comparison, the reader will learn the value of different kinds of green food as producers of flesh, bone, and muscle.

The following is a list of the choicest kinds of Parsley, all but the two last being prize-takers, viz. :—

- |                                          |                                            |
|------------------------------------------|--------------------------------------------|
| 1. CARTER'S COVENT GARDEN<br>GARNISHING. | 5. EXTRA SCOTCH CURLED.                    |
| 2. CHAMPION MOSS CURLED.                 | 6. DICKSON'S TRIPLE<br>CURLED : very fine. |
| 3. DUNNETT'S GARNISHING.                 | 7. LARGE-ROOTED HAMBURG.                   |
| 4. MYATT'S GARNISHING.                   | 8. FINE DOUBLE CURLED.                     |

PLAIN PARSLEY.—Excellent food for horses, sheep, or cows. “A small quantity may be profitably sown on pasture lands.”—*Carter*.

The Parsley possesses medicinal properties which are worth knowing, viz. :—“The roots are diuretic: the seed is a carminative: the leaves are a pleasant stimulating salad; they are diuretic, and are at once recognized by their agreeable smell.”—*Sup., British Pharmacopæia*.

### THE FENNEL.

The *Sowa* (*Feniculum officinale*), or Fennel, grows all over India. The green leaves are used in the seasoning and preparation of fish and vegetable curries. It should be sown

broadcast in the same way as common Parsley, and for the same purpose. Where it has been once grown, it will come up each cold season from seed self-sown. The value of this plant is but little understood. As a producer of bone and muscle, it ranks next to Parsley, but is inferior as a flesh-producer. The seeds are very aromatic and carminative, and a tea-spoonful of them given to cows in milk increases that secretion. They may be given daily if the milk is failing, and double the quantity if the cow is sick. If it be desired to make Fennel hay, cut the plants just as they come into flower, tie them into bundles, and dry them in the shade on matting, so that no portion of the plant may be lost. As the Fennel dries up after ripening seed, its preservation as hay is advisable; the virtues of the plant being thus made available, until the fresh crop is fit for cutting as green food.

According to the analysis of M. Solly, 10,000lb of fresh-cut Fennel contain—

|       |     |                 |     |                 |     |         |
|-------|-----|-----------------|-----|-----------------|-----|---------|
| Water | ... | 8,761lb         |     | Organic matters | ... | 1,048lb |
|       |     | Mineral matters | ... | 191lb           |     |         |

In order to secure a supply of seed, a sufficient number of plants should be allowed to attain maturity, and they will ripen their seed in April-May, when they should be collected, dried under cover, and stored in closed earthen vessels, so that the ants may not be able to carry them away to their store-houses.

### CRESS.

The *Haulim* (*Lepidum sativum*) is a native of India; but the leaves are not eaten by the Hindoos, who cultivate the plant for the sake of the seeds, which possess medicinal properties, being "opening, incisive, and anti-scorbutic."—*O'Shaughnessy*.

The young and tender leaves, as also the seed leaves, are eaten freely by the entire European races wherever existing. The great demand for this palatable anti-scorbutic green meat has led to its careful cultivation, and four kinds take rank as prize-takers. In the hills, the season for sowing the summer kinds of Cress commences in March,—the seed to be sown in small quantities, at short intervals. The Winter or American Cress should be sown towards the end of August, to stand through the winter. In the plains, all kinds of Cress may be sown as soon as the rains cease, the Winter Cress being sown from the 15th of October to the 15th of November.

It is not generally known that the common Cress takes the first place as an oil crop; for not only does it bear seed most abundantly, but these seeds, weight for weight, yield more oil than any other oil-seed under cultivation. Thus—

|                              |     |              |           |
|------------------------------|-----|--------------|-----------|
| 100lb. of Cress seed give    | ... | ...          | 57lb oil. |
| „ Rape and mustard seed give | ... | 34lb to 36lb | „         |
| „ Colza seed give            | ... | ...          | 39lb „    |
| „ Hemp seed give             | ... | ...          | 25lb „    |
| „ Sunflower seed give        | ... | ...          | 15lb „    |

The following is a list of the various kinds of Cress now cultivated in Europe, viz.:—

1. THE TRIPLE CURLED.
2. NEW AUSTRALIAN GARDEN.
3. THE PERENNIAL AMERICAN.

4. THE BROAD-LEAVED GARDEN.
- THE GOLDEN.
- THE NORMANDY.
- THE COMMON GARDEN.

### THE WATER-CRESS.

The Water-Cress (*Nasturtium officinale*) is indigenous to the Himalayas, and is called *Chund-soor*. It grows wild, and is rarely eaten by the Hindoos, who, however, gather large quantities, which they bring in for sale to the European purchasers.

In the plains, the plants are propagated from seed or cuttings; and if a tank be available, a floating-bed may be made in the usual manner, the Cress being planted thereon. The roots will soon reach the water, and a continuous supply be secured. The roots of the Water-Cress will take up iodine, if it be present in the water in which they happen to grow. Hence, if it be desired to produce iodized Water-Cress, a solution of iodine diffused in a half-cask filled with water, and having a Water-Cress bed on its surface, will yield the desired result. Persons suffering from scurvy are cured by eating Water-Cresses; and if the leaves be picked off and boiled in milk, like Spinach, the most delicate person may eat them without suffering from indigestion or dyspepsia.

### THE SPINACH.

The *Pau-luck* (*Spinacea oleracea*), or Spinach, is indigenous to India. In Europe there are two varieties—the prickly-seeded with triangular leaves, and the smooth seeded with round leaves. The Spinach loves an exceedingly rich soil, in which lime and potash must be abundantly present.

The Spinach is a most valuable vegetable for the sick, and especially for persons recovering from fevers and other emaciating diseases. When properly cultivated, the leaves are large and succulent, and rich in potash, to which their restorative value is due.

We have grown the Spinach to great perfection by liming, and then digging up the soil, over which four inches in depth of horsedung was spread, and then well watered with an aqueous solution of saltpetre; the allowance being one chittack to the square yard of land. Next day the manure was dug into the soil and well worked in, all stones being removed and clods pulverised. The bed, when ready, was sown, and in due time produced the finest crop of Spinach we have ever seen.

In the hills, sow round Spinach in succession from 15th March (or earlier, if the weather permits) to the 20th of June; and the prickly sort, the last week in August or first week in September, to stand through the winter. Sow the New Zealand during the first week in April, and transplant at the end of May (or when the *chota bursat* commences), three feet apart, in good ground richly manured with sheep-manure. In the plains, sow from 15th of September to 15th November.

The following is a list of the best kinds of Spinach cultivated in England, the two first being prize-takers, viz. :—

1. THE ROUND.

2. THE PRICKLY.

3. BROAD. FLANDERS NEW  
ZEALAND.

4. NEW PERPETUAL, OR BEET.

#### THE ORACHE, OR FRENCH SPINACH.

The Garden Orache (*Atriplex hortensis*) is a native of Tartary, and was once cultivated in lieu of Spinach. It has come into fashion again, and has been sufficiently improved to be looked upon as a prize vegetable.

In the Himalayas, sow for succession in March and April, in good ground not highly manured.

Of the three kinds of Orache mentioned in the list given below, the first and second are prize-takers:—

- |                    |                          |
|--------------------|--------------------------|
| 1. THE RED ORACHE. | 2. THE NEW GIANT ORACHE. |
| 3. THE YELLOW.     |                          |

### THE LOVE-APPLE (TOMATO).

The Tomato (*Solanum lycopersicum*) is known to the *mallees* as the *Billatee Bai-gun*, or English Brinjal. This vegetable is held in very high estimation in Europe, and very justly so. In Spain it seems to occupy the place of the Brinjal of India, and in India for years it was considered as the foundation of "Tapp's Sauce," and gave its name to soup and cutlets. Dr. Bonavia (of Lucknow) discovered its immense value as a remedy for the treatment of hepatic complaints, and since then it is esteemed as a medicine by persons suffering from hepatic derangement, and as a valuable esculent by all in health. As its cultivation is perfectly understood by the *mallees* in the hills and plains, we have only to give a list of the various kinds now in cultivation in England:—

#### *List of Tomatos.*

- |                                   |                            |
|-----------------------------------|----------------------------|
| 1. KEYE'S EARLY PROLIFIC.         | 6. YELLOW CHERRY.          |
| 2. SIM'S MAMMOTH NEW<br>ANT FINE. | 7. ORANGE FIELD DWARF.     |
| 3. NEW SCARLET PEAR-<br>SHAPED.   | 8. GENERAL GRANT.          |
| 4. NEW RED CURRANT.               | 9. THE TROPHY.             |
| 5. TOMATO DE LAYE.                | 10. HUBBARD'S CURLED LEAF. |
|                                   | 11. MAUPAY'S SUPERIOR.     |
|                                   | 12. NEW STRAWBERRY.        |

All prize-takers—others left out.

### THE RADISH.

The *Moolee* (*Raphanus sativus*) is the Hindee for the Radish, of which there are two principal kinds in cultivation, namely, the Long-rooted and Turnip-rooted. In the Himalayas all the imported kinds are successfully cultivated.

To be grown to perfection, the Radish requires a rich and light soil, with occasional copious supplies of water, so as to induce rapidity of growth, otherwise the roots will not be tender, nor will their flavour be mild. The watering in summer should be done early in the morning, and be finished by 8 a.m. They should not be watered in the afternoon.

The proper time for sowing the early kinds (in the hills) is in February and March, and the Spring Radishes so obtained will be ready for use in April and May. The seeds of later kinds should be sown twice a month, according to probable consumption, till the 15th or 20th of June. The Winter Radishes should be sown in the last week in August, if the weather permits, otherwise in the first week in September; these will come into use in November, and will last till spring. In the plains, the sowing season begins from the 20th of September, and lasts through October, the early kinds being sown during February. The best and most economical method is to sow in drills; they should be in rows nine inches apart, and the seed should be buried in them a quarter of an inch deep. After the sowing, the ground should be beaten down gently with a spade. The seed usually germinates within the week, and the Radishes are ready for pulling within thirty days after. Consequently, repeated sowings for succession-crops should be made at intervals of fifteen days. The *mallee* should be instructed to sow the seeds four inches apart, so as to save the trouble and waste of thinning out the plants afterwards.

The Turnip-rooted Radishes are sown in the same manner, and, according to Captain Weston, "transplant very well if taken up young, and give much finer Radishes than the seed-bed; being larger, milder, and more crisp."

We consider it necessary to mention that whilst Radishes provoke and excite the appetite, they act as a laxative, and should be avoided by persons who suffer from bowel complaints. There cannot be a simpler or more palatable remedy for those who suffer more or less from constipation.

In the following list the prize kinds are marked with an asterisk, and the others are the best of their kind:—

#### SPRING RADISHES.

EARLY SHORT TOP.\* | WOOD'S FRAME.\*

The Taper-rooted spring Radishes are—

- |                       |                 |
|-----------------------|-----------------|
| 1. THE LONG WHITE.    | 3. THE SALMON.  |
| 2. THE PURPLE.        | 4. THE SCARLET. |
| 5. THE WHITE RUSSIAN. |                 |

The later Spring kinds are—

- |                                     |                                    |
|-------------------------------------|------------------------------------|
| 1. THE FRENCH BREAKFAST<br>RADISH.* | 7. TURNIP MIXED.*                  |
| 2. LONDON PARTICULAR.*              | 8. SCARLET OLIVE-<br>SHAPED.*      |
| 3. BECK'S SUPERB SCAR-<br>LET.*     | 9. WHITE OLIVE-SHAPED.*            |
| 4. LONG SALMON.                     | 10. NEW CHINA ROSE-CO-<br>LOURED.* |
| 5. TURNIP SCARLET.*                 | 11. WHITE NAPLES.                  |
| 6. TURNIP WHITE.                    |                                    |

#### WINTER RADISHES.

1. NEW CALIFORNIAN MAMMOTH WHITE RADISH.\*
2. BLACK SPANISH.
3. BROWN OBLONG.

4. LARGE PURPLE.

5. ROUND BROWN.

6. WHITE SPANISH.—A large bulb, which in good soil grows to the size of a small stubble Turnip.

### THE RAMPION.

The Rampion (*Rapunculus esculentus*) should be sown in May and June in the hills. It bears a blue flower in July and August, and the esculent root is far more delicate in flavour than either the Radish or Turnip. In the plains, sow in October in limed soil, in drills, like Radishes; and the same plan of cultivation is to be followed in the Himalayas.

### THE SALSIFY.

The Salsify (*Tragopogon porrifolium*) should be sown in the hills in April, in deep rich soil. If sown broadcast, thin out at an early date; and if in drills (which should be made nine inches apart), thin out to six inches apart. Water every other day if the weather is dry.

The Salsify bears a purple flower in May-June. It is a perennial. The root is the part eaten, and is, when ready, (about three months from the time of sowing,) of the thickness of a man's forefinger, and nine inches in length.

In the plains, sow in September-October, and preserve some plants for seed.

In France the Salsify is much esteemed, and according to the analysis of M. Solly, 10,000 parts of the fresh roots contain—

|                 |     |     |         |
|-----------------|-----|-----|---------|
| Water           | ... | ... | 7,951lb |
| Organic matters | ... | ... | 1,929lb |
| Mineral matters | ... | ... | 120lb   |

The Americans call it the Oyster-plant, as, when cooked, it is said somewhat to resemble an oyster in flavour. The Salsify roots are washed and scraped, and then parboiled; they are next cut up into two or three-inch pieces, rolled in butter and fried. They may also be stewed slowly till quite tender, and then be served up with melted butter.

### THE SCORZONERA.

The Scorzonera (*Scorzonera Hispanica*) is cultivated like the Salsify. The Russian kind is considered superior to the Spanish, and takes rank as a prize vegetable.

### THE SKIRRET.

The Skirret (*Sisarum skirret*) is a native of China, Japan, and the East Indian Islands. There are two kinds. The root of the first is cooked and used as a potherb; it is said to be a stomachic, and a specific against the bad effects of mercury. Sugar is made from it. The second kind is purely medicinal, and is called *Nin-sing*.

The seeds of Skirret should, in the hills, be sown during the first week in April, to be thinned out early; the cultivation being the same as for Parsnips.

### THE SORREL.

The Sorrel (*Rumex acetosella*), should be sown in the Himalayas in all April. There are two kinds under cultivation—the common and the broad-leaved Sorrel.

The tender sourish leaves are much used in French cookery. The Sorrel requires a rich soil, well manured with goats' droppings previously enriched with saltpetre solution.

"The leaves of the common Sorrel are used in medicine. They act as a refrigerant and diuretic. The leaves of the *R. acetosella* contain much oxalate of potash. They are very cooling and antiscorbutic, are eaten in salads, and make excellent whey by boiling a few in milk; this is a cooling and pleasant drink in febrile and inflammatory diseases."—*Sup., Brit. Pharmacopœia.*

### THE RHUBARB.

The garden Rhubarb grows very well at Simla. There is a local kind which grows in the interior, some 60 to 80 miles north of Simla. It is a very beautiful plant, and the main stem is eaten.

In the Himalayas, the seeds of the imported kinds should be sown in April—say, first week—if the weather is fair. Transplant in May-June into a deep rich soil; allow a clear space of two feet between plant and plant. To give an additional size to the stems, cut off the seed-stalk. Suckers taken from known and approved plants succeed well. In taking away the stalks for use, do not cut them, but wrench them from the main stock, so as to take them out by the socket. The Rhubarb is a perennial.

The best kinds are as follows, viz. :—

- |                         |              |
|-------------------------|--------------|
| 1. NEW EMPEROR (Prize). | 3. VICTORIA. |
| 2. ROYAL ALBERT         | 4. MIXED.    |

### PUMPKINS.

The Pumpkin (*Cucurbita pepo*), the Squash (*Cucurbita melopepo*), and the Vegetable Marrow (*Cucurbita ovipera*), all grow to great perfection in the Himalayas.

The Hindee word *Kuddoo* is applied by the *mallees* to all vegetables of this class, and to distinguish the imported from the local kinds, the word *Billatee* is prefixed. Thus, the imported Vegetable Marrow is dubbed *Billatee Chuck ky-eeah Kuddoo*, and any others according to colour and shape.

In the hills, the seeds of all kinds should be sown in April-May, according to the state of the weather, for these plants suffer from cold; so consult the thermometer, and do not sow if it marks 66°F. in the shade. The soil should be limed and manured as if for Cucumbers, and the beds kept free of weeds. Almost all the Pumpkin tribe are climbers, and should be treated accordingly.

In the plains, the sowing of the seed should not take place till the last week in February, as until then the weather is too cold for these plants.

The best imported kinds of Pumpkin are—

1. THE LARGE YELLOW. | 2. THE MAMMOTH.

Of Squashes there are eight varieties, the seed being mixed and so supplied; therefore the Indian producer should reserve the seed of the kinds he considers the best.

The Vegetable Marrow is entitled to honors, and of the seven kinds named all but the two last are highly esteemed prize vegetables. They are as follows:—

- |                             |                                 |
|-----------------------------|---------------------------------|
| 1. MOORE'S VEGETABLE CREAM. | 5. NEW IMPROVED CUSTARD MARROW. |
| 2. NEW CUSTARD.             | 6. LARGE WHITE.                 |
| 3. NEW BUSH OR CLUSTER.     | 7. GREEN STRIPED.               |
| 4. WHITE EGG-SHAPED.        |                                 |

The local or Indian kinds of Pumpkins most esteemed are—

1. The *Koonh-rah*, or Red Pumpkin (*Cucurbita maxima*), which is cooked in various ways, and is much relished when made into a sweet Pumpkin pie.

2. The *Paet-ha*, or White Pumpkin (*Benincasa cerifera*), is a large, handsome, oval-shaped Pumpkin, which may always be recognized by its skin being covered with a pale greenish-white waxen bloom. The celebrated *Paet-ha* sweetmeat of Delhi and Saharunpore is made from this gourd, which is cooked in various ways and much esteemed by the people of India.

3. The *Loukee*, a pale-green, long thin gourd, which bears white flowers, and comes into season in the hot weather, when it is much used in the preparation of vegetable ~~curries~~ and is cooked and served in various other ways as a vegetable.

The Californian Pumpkin was introduced last year into India by the Agri-Horticultural Society. We obtained two seeds and two Pumpkins, which were of a deep-orange mixed with deep-green inside. The smell and taste of the uncooked vegetable was like a fine Cucumber, and, when boiled, the flavour was that of the Carrot and Pumpkin united. We highly recommend this very superior vegetable to notice. The very heavy rains injured the roots of both plants, and we were obliged to gather the immature Pumpkins, and so lost our chance of preserving the seed. But as five other gentlemen also received two seeds a-piece, perhaps they were more successful. The peculiarity of this Pumpkin is, that the fruit forms first, and the flower is developed from the upper end of the fruit; both continue growing till the fruit is of the size of a Walnut, when the flower gradually withers away. The plant bears an immense number of barren flowers—all stalk with a flower at the end of it. We think these should be removed, as they merely waste the strength of the plant. The Hindoos eat the flowers of most kinds of Pumpkins (*i.e.*, all that bears yellow flowers), which are first dipped in a thin paste made of *dall* or gram meal, and milk or buttermilk.

and then fried in *ghee*. Hence, these barren flowers might be similarly eaten by Europeans.

### THE KURÆLA.

The *Kuræla*, or Bitter Gourd (*Momordica charantia*), is cultivated as an esculent in most Indian gardens. This bitter vegetable is very wholesome and nourishing, and as its bitter taste is due to an alkaloid, persons suffering and recovering from fever are much benefited by its use. It is made into a vegetable *curry*, after a portion of the bitter principle has been extracted by soaking it for twelve hours in brine. Many Europeans are partial to it: much consumed by the natives.

### THE TURNIP.

The *Shulgum*, or Turnip (*Brassica rapa*), is indigenous to India, and one of the finest varieties to be met with is the flat White Turnip of Cashmere. The true local kinds, though large and well-formed, have a strong and rather disagreeable flavour, which renders them quite unfit for the gentleman's table; in fact, European Cattle Turnips are better flavoured. The people of Cashmere cut their Turnips into slices, run a string through the discs, and dry them in the sun; the vegetable so prepared keeps well, and supplies the inhabitants with vegetable food during the winter. When required for use, the slices are soaked in water, cut up, and made into vegetable *curry*, or are added to meat *curries*. Common Turnips similarly preserved may be steamed and given to cows, goats, and sheep. We mention this as it might be of use to European planters resident in the Himalayas.

The cultivation of the Turnip on the large scale, as a field crop, belongs to Agriculture. But he who can grow

first-class Turnips in his garden, may apply the same plan of cultivation with success.

The Turnip requires a light (sandy) soil of good quality ; and in the Himalayas the soil formed by the disintegration of quartz and silicious rocks, is admirably adapted for the cultivation of this vegetable. The land should be limed and dug up. Cattle-manure (a mixture of all kinds available), previously enriched by being sprinkled over with saltpetre water, should be spread over the surface of the soil, and be worked into it with the light draw hoe. A sufficient quantity of bone-manure, (for its preparation, see "Pogson's Handbook of Agriculture,") previously soaked in a strong solution of sulphate of soda (*kharee nemuck*), and then mixed with four times the quantity of sand or pulverised soil, should be strewn by hand over the surface of the land, and then be raked in. One ounce of Turnip seed will suffice for 200 square feet of surface. The seed should be sown in drills one foot apart, and the plants thinned when they come into leaf, to afford room for their expansion, as nothing can be more injurious to the plants than to allow them to be in the least crowded, for in that case they expend themselves in leaves without forming bulbs. Deeply hoe the ridges after thinning, and keep the surface clear of weeds. One chittack of bone-manure to the square yard will be the proper quantity. One chittack of sulphate of soda should be allowed to every 20 chittacks ( $1\frac{1}{4}$  seer) of bone-manure. One hundred chittacks ( $6\frac{1}{4}$  seers) of cold water will dissolve 37 chittacks of the salt, and constitutes a strong solution. With the *data* given, the quantity of mineral and saline manure required for any quantity of land can be very easily determined. We may here mention that the constant failure of field Turnip crops in India, when raised from the best imported seed,

(such as "Carter's Imperial Hardy Swede," "Carter's Improved Purple Top Mammoth Turnip," and other superior varieties of Cattle Turnips), is due to the land and manure being most detrimentally deficient in sulphuric acid, soda, potash, and phosphate of lime. The manures indicated supply these substances, and as a natural consequence the failure of the crop is rendered next to impossible. The Turnip being a most valuable crop both for man and domestic cattle, all information connected with it is of value.

100lb of fresh Turnips contain—

|                        |      |            |     |      |
|------------------------|------|------------|-----|------|
| Water, from 89lb to... | 91lb | Gluten ... | ... | 1½lb |
| Skin ...               | 2lb  | Fat ...    | ... | ½lb  |
| Equivalent of starch   | 6lb  | Ash ...    | ... | ¾lb  |

100lb of dried Turnips contain—

|                        |      |                       |     |     |
|------------------------|------|-----------------------|-----|-----|
| Starch, equivalent ... | 77lb | Fat ...               | ... | 3lb |
| Gluten ...             | 14lb | Ash or mineral matter | ... | 6lb |

According to the analysis of Professor Balfour, 1,000 parts of Turnips consist of—

|              |       |              |       |
|--------------|-------|--------------|-------|
| Carbon ...   | 429lb | Oxygen ...   | 422lb |
| Hydrogen ... | 56lb  | Nitrogen ... | 17lb  |
| Ash ...      | ...   | ...          | 76lb  |

190lb weight of these ashes, on being subjected to analysis by Professor Johnston, were found to be composed of—

|                     |       |                     |       |
|---------------------|-------|---------------------|-------|
| Potash and soda ... | 51½lb | Phosphoric acid ... | 11¼lb |
| Lime ...            | 11¼lb | Sulphuric acid ...  | 15lb  |
| Magnesia ...        | 3lb   | Chlorine ...        | 5½lb  |
| Oxide of iron ...   | ½lb   | Silica ...          | 2lb   |

In order that the value of these figures may be better understood, we would draw attention to the fact that a singularly fertile soil contains in 1,000 grains only 2 grains of sulphuric acid, whilst an ordinary soil contains only

three-quarters of a grain of this acid, which is so largely present in the well-grown Turnip.

Under proper cultivation one acre of land (suited to Turnips) will produce 30 tons or 810 maunds of Turnips; and as every 13,334lb of them (162 maunds and  $25\frac{1}{4}$  seers) yield 100lb of ash containing 15lb of sulphuric acid, the 810 maunds will require and remove 75lb of it from the soil, that is, if only 30 tons per acre are produced. This quantity equals 67,200lb; and as there are 43,560 square feet in an acre, if we allow one Turnip to each square foot and 1lb 8oz. as the weight of each root, we have a good idea of what Turnip cultivation was some twenty years ago, when Professor Balfour wrote his work on Botany. But what ordinary Turnip cultivation is now (1871-72) will be better understood when we mention that Turnips weighing 18lb each are nothing uncommon, whilst 22lb won the prize for size.

Her Majesty the Queen and His Royal Highness the Prince of Wales exhibited Turnips grown on the Royal Farms at Windsor and Sandringham. All competitors had to exhibit 24 roots of "Carter's Imperial Hardy Swede;" and as the prize was awarded to the grower of 24 roots which weighed 4 cwt. 16lb (or 19lb  $5\frac{1}{3}$ oz. each), the numerous exhibitors of 24 Turnips weighing only 4 cwt. (or 18lb  $10\frac{3}{4}$ oz. each) were no doubt disappointed. In such company 18lb Turnips could not even be placed; yet we are assured all were grown "by Messrs. Carter's customers under ordinary farm culture."—*The Times*, December 8, 1871, and *The Farmer*, December 11, 1871.

These facts and figures have been brought forward to show what saline and mineral manures will accomplish. To obtain the sulphuric acid, the sulphate of soda must be used,

and the chlorine can be obtained from common salt alone, every 10lb of which contain 6lb of chlorine.

100lb of the bazar sulphate of soda (or *kharee neemuck*) contain—

|           |                    |  |          |       |
|-----------|--------------------|--|----------|-------|
| Water ... | 56lb               |  | Soda ... | 19½lb |
|           | Sulphuric acid ... |  | 24½lb    |       |

Both these saline manures are under the excise, and so heavily taxed as to be quite beyond the farmer's reach; but the wealthy amateur, by consulting the figures given in the analysis, will be able to calculate the quantity of salt and sulphate of soda needed by 30 tons of Turnips, and this quantity, doubled, will have to be applied to the acre of land, so that the growing crop may take up what it requires and leave the rest in the soil. Of course, land so manured will yield much more than 30 tons of Turnips, and after the crop is weighed, the amount should be noted, to enable the producer to calculate how much of each mineral component has been removed from the soil by the crop, and the loss will have to be made good by its artificial restoration.

The European tea-planter and settler in the Himalayas may hereafter take to sheep-farming and wool-growing, and to do so profitably a knowledge of Turnip cultivation is essentially necessary. We have supplied the best and fullest information, and would suggest that those interested should get their hands in, by cultivating different kinds of Turnips on a regular scale—say, the tenth or the twentieth of an acre; and with the experience so acquired, they will be enabled to work on the larger scale, should circumstances render it necessary. Profitable tea-planting without proper manuring is not feasible, and as the manure of the sheep is best fitted for the Tea-plant, sheep-farming and tea-planting should go together. The application of cowdung-manure will produce

12 per cent. of nitrogenous matter ; that of the sheep, 32 $\frac{2}{10}$  per cent. Hence, keeping a large number of cows and oxen for the sake of their manure for Tea-plants, is bad husbandry.

In the hills, sow Turnip seed in the last week of March for an early crop ; and for main crops in succession, sow every three weeks till the rains commence. For winter use, sow in the last week in August, if the weather is fair ; otherwise as soon as the rains cease. In the plains, commence sowing seed from the 15th of September, and stop after the 20th of October : water if the weather is dry, otherwise not.

In the following list, the first eight kinds are table Turnips to which prizes have been regularly awarded, and the remainder are the best of their kind, viz. :—

- |                                       |                                 |
|---------------------------------------|---------------------------------|
| 1. CARTER'S NIMBLE SIX-<br>WEEK TRUE. | 8. CHIRK CATTLE BLACK<br>STONE. |
| 2. EARLY SELECTED STONE.              | 9. AMERICAN STRAP-LEAVED.       |
| 3. EARLY SNOWBALL.                    | 10. EARLY DUTCH.                |
| 4. EARLY POLLEY'S NON-<br>SUCH.       | 11. EARLY MOUSETAIL.            |
| 5. YELLOW MALTESE.                    | 12. RED AMERICAN STONE.         |
| 6. YELLOW ORANGE JELLY.               | 13. YELLOW DUTCH.               |
| 7. THE JERSEY NAVET.                  | 14. YELLOW ALTRINCHAIN.         |
|                                       | 15. GOLDEN STONE.               |

There are certain Turnips which thrive in soil more or less stony, and are named Stone Turnips. Ridiculous as it appears, we have heard the opinion rather warmly expressed, that the Stone Turnip had a hard centre, *unde nomen*.

#### CATTLE TURNIPS.

1. CARTER'S IMPERIAL HARDY SWEDE.—A handsome Swede, with small neck ; grows to a great size, and is of fine quality ; most nutritious.

2. CARTER'S LONDON PURPLE TOP.

3. HALL'S WESTBURY.

4. SKIRVING'S IMPROVED PURPLE TOP.—Grows to a large size.

5. CARTER'S IMPROVED PURPLE TOP MAMMOTH.—An early Turnip. This variety grows quickly to a large size, and the texture of the root is firm and very juicy.

6. CARTER'S DEVONSHIRE GREY STONE TURNIP.—Very hardy, and of quick growth.

7. LINCOLNSHIRE RED GLOBE.—Very hardy, large size, and excellent feed.

8. HEANLEY'S LINCOLNSHIRE WHITE GLOBE.—A good large variety ; very popular.

9. POMERANIAN WHITE GLOBE.

10. IMPERIAL GREEN GLOBE.—A very heavy cropper.

*Yellow-fleshed varieties.*

1. CARTER'S CHAMPION GREEN TOP YELLOW HYBRID TURNIP is the best of this kind.

2. CARTER'S CHAMPION PURPLE TOP YELLOW HYBRID.—Very choice.

3. DRUMMOND'S EARLY FIELD YELLOW is a small, quick-growing, green-top yellow, suitable for early or very late sowing.

4. ROBINSON'S GOLDEN BALL OR ORANGE JELLY.—A very true stock.

All these Cattle Turnips are prize-holders.

THE POTATO.

The Potato (*Solanum tuberosum*) is a native of America, and was introduced into India by the English, and has been almost exclusively cultivated for the use of all classes of

Europeans. The Hindoos, strange to say, do not care much for the Potato, and the Mahomedans only use them in the form of vegetable *curry*. The cultivation of the Potato has been greatly extended, both in the Himalayas and plains, since the European troops have been supplied with them as part of their rations.

The Potato disease has made its appearance in India and in the hills; good Potatoes are now very uncommon, the whole of the old stock being more or less diseased. Of the new, the Climax Potato, introduced by Colonel Shelley, of the Bengal Army, is the best, and it is most satisfactory to know that in addition to being highly prized by growers and appreciated by consumers, it is admirably suited to the climate of India, thriving in the plains as a late Potato, and in the Himalayas as the best of the early ones; whilst later sowings produce a first-class late Climax Potato.

The immense value and productiveness of the Potato is little known or understood in India, and we have known old "Qui Hye's" positively decline to believe that 8 tons (or 216 maunds) per acre was an ordinary crop. When making our assertion, we were aware that double the quantity had been produced, and that the Bovinia Potato had under favourable circumstances yielded 20 tons, and double this quantity (40 tons, or 1,080 maunds), under extra-culture or high farming. Here, again, saline and mineral manures, with farm-yard manure enriched with a percentage of guano, had been called into play, and had silently and ably performed their part, to the advantage of the practical but scientific farmer. It is not for a moment to be expected that such crops can be raised, either in the hills or plains, without suitable manure; but with them there is nothing whatever in the soil or climate to prevent similar results from being attained.

Under Turnips we have explained how the quantity of mineral matters needed should be calculated, so we shall here merely give the analyses, and leave the calculations to the reader or amateur gardener. We however consider it necessary to state that the Potato is rich in starch and poor in gluten; hence the necessity for using vegetable and animal manure, which will produce much starch or carbon, and little gluten or nitrogenous matter. Of the vegetable manures, that made from the megass, or squeezed Sugarcane, is the richest in carbon, and next to it Sunflower leaves and stalks mixed with leaf-manure (*vide* "Pogson's Handbook of Agriculture" for their preparation). Of animal manures, pigeons' dung is the richest in carbon, and cowdung is the next richest; whilst both are equal as gluten-producers. Horsedung ranks last; and sheep and goats' manure, from its great richness in nitrogen (32.9) and poorness in carbon (42.6), is not fitted for the Potato. The first-mentioned will give 63.2 of carbon, the next 62.3, and the last 61.6, with an average of 12.6 of nitrogen.

The mineral matter of the Potato exists in the skin and haulm of the plant, and the starch and gluten in the tuber.

100lb of raw Potatoes contain—

|        |                        |           |         |
|--------|------------------------|-----------|---------|
| Water  | ... 75lb               | Gluten... | ... 2lb |
| Skin   | ... 2 $\frac{3}{4}$ lb | Fat ...   | ... 1lb |
| Starch | ... 19lb               | Ash...    | ... 1lb |

—Johnston.

100lb of dried Potatoes contain—

|        |          |         |         |
|--------|----------|---------|---------|
| Skin   | ... 11lb | Fat ... | ... 1lb |
| Starch | ... 76lb | Ash ... | ... 4lb |
| Gluten | ... 8lb  |         |         |

—Johnston.

According to Professor Balfour, 10,000lb of Potatoes are composed of—

|          |           |          |          |
|----------|-----------|----------|----------|
| Carbon   | ... 441lb | Nitrogen | ... 12lb |
| Hydrogen | ... 58lb  | Ash ...  | ... 50lb |
| Oxygen   | ... 439lb |          |          |

By the process of drying, Potatoes lose from 72·2 to 75 parts of their weight of water.

When Potatoes are subjected to distillation in the manufacture of Potato whiskey, their skins remain in the still, and 100lb of ashes obtained from their incineration contain as follows, viz. :—

|                 |             |                |             |
|-----------------|-------------|----------------|-------------|
| Potash          | ... 38·52lb | Oxide of iron  | ... 1·50lb  |
| Soda            | ... 4·47lb  | Common salt    | ... 4·00lb  |
| Phosphoric acid | 16·78lb     | Sulphuric acid | ... 6·10lb  |
| Lime            | ... 5·19lb  | Silicic acid   | ... 2·84lb  |
| Magnesia        | ... 7·33lb  | Carbonic acid  | ... 12·27lb |

—*Mr. Porter, vide Liebig's Letters.*

From these figures we learn that potash and phosphoric acid are the mineral substances most required by the Potato-plant, and as every 1,000 grains of saltpetre contain 465½ grains of potash, its employment as a saline manure is obvious, for in no other way can so large a quantity of potash be obtained in so economical and perfect a form as in nitre. The phosphoric acid exists, ready formed, in bones of all kinds, and in the fossil phosphate of lime deposited in such incalculable quantity in the Sewallick range of hills.

To facilitate calculations on the large scale, we subjoin Professor Johnston's analysis, which shows that 100lb of the Potato tuber contain—

|                 |          |                 |          |
|-----------------|----------|-----------------|----------|
| Potash and soda | ... 63lb | Phosphoric acid | ... 18lb |
| Lime            | ... 2lb  | Sulphuric acid  | ... 4lb  |
| Magnesia        | ... 5lb  | Chlorine        | ... 6lb  |
| Oxide of iron   | ... ½lb  | Silica          | ... 1½lb |

As every 100lb of Potato tubers removes 1lb of mineral matter from the soil, a simple calculation will show that a crop of 20 tons (44,800lb) will extract and take away absolutely 448lb of mineral matter therefrom, and unless the soil has been so enriched by art as to meet this removal (without being the worse for it), impoverishment must be the natural consequence.

In reference to Potato culture, Mr. Firminger observes in his "Manual of Gardening," that "it is important that the crops should not be grown two successive seasons in the same spot. There is no plant that rejoices more in entirely fresh ground than the Potato." The reason of this is obvious: the new soil contains the mineral matters which have been extracted and removed from the soil of the old spot, hence it will not grow a second crop of Potatoes; but if the loss is made good in the manner indicated, the Potato may be cultivated from year to year in the same locality.

It should be remembered that if a 20-ton crop is expected, mineral manure sufficient for a 40-ton crop should be applied to the soil, whilst the farm-yard manure should be restricted to a 20-ton crop.

The late or autumnal Potato crop should never be gathered till the leaves and stems (or haulm) of the plants have quite dried up, for it is not until then that the Potatoes are thoroughly ripe; and unless they are so, they will not keep well when laid in store, neither will their flavour and distinguishing qualities be fully and properly developed. The haulm of the Potatoes should never be removed from the field, and they should be covered over with soil as the digging proceeds, so that their contained carbon and mineral matters may be restored to the land.

The starch of the Potato and its haulm have, weight for weight, exactly the same composition. Thus, 810lb of haulm contain 360lb of carbon, which is the exact quantity present in 360lb of starch.

In the Himalayas, the early kinds of Potato are sown in March, as soon as the frosts are fairly over; that is, after the 20th at the higher elevations (6,500 feet above the sea-level), and after the 10th of the month at the lower ones. All the late kinds of Potatoes are sown in May and June, at short intervals of two or three days, to allow for the collecting and applying of the farm-yard manure.

The ground for the late Potatoes should be prepared in all April, and from our experience we would strongly recommend the land being ploughed in October or November, and then manured with cow or horsedung to be cross-ploughed in. By this means the eggs and *larvæ* of grubs, worms, and beetles are killed by the snow and frost, and the future crop is protected. The manure in April is teeming with life; and as the season advances, the increase of temperature calls countless broods of insect-life into existence, which attack both leaves, stalks, and the tubers at all stages of their growth, to their great injury and, very often, utter destruction.

The mineral manure should be applied to the ridges one or two days before putting down the seed Potatoes. The new and improved kinds of Potatoes produce not only a considerable number of large sized tubers, but an extent of haulm-growth which corresponds. Hence, if entire Potatoes are put down—which is by far the best plan—a clear space of four feet should exist between every two Potatoes. The ground having been marked off into lines running east and west, and four feet apart, a cross mark should be made at every four feet. At these spots a circular bed, twelve inches in diameter, is to be made,

and the proper quantity of mineral manure strewn over its surface, the manure being covered over with a handful of fine soil. This done, place an entire Potato, with its rose end towards the east and its root end towards the west, in the centre of the bed, and cover it as well as the entire bed well over with soil. This may be best done by hoeing up the soil from the north and south sides of the line. The ridge so formed should be fully six inches in height, and its base eighteen inches in width. This operation is to be repeated till the planting is completed. The furrows formed between every two ridges should be made to act as drains, so that the rainfall may be speedily carried off. When the young plants are from nine to twelve inches in height, the earthing-up should begin. For this purpose, cut the ridge crossways at every two feet, measuring from one plant towards the other; take the soil from either side—*i.e.*, east and west—and draw up towards the plant till it is earthed up to a height of three inches. By repeating this operation with each plant the Potato field will be divided into beds, each being four feet square, and occupying sixteen square feet of space, with a vigorous Potato plant growing in the centre. This constitutes the first earthing-up, and the second will be a repetition of the operation, when they have made a further growth of three inches; the soil being, as before, taken from the east and west, so as to make the cross furrows deeper at each earthing-up until they are of the same depth as the furrows running east and west. The plants will require to be earthed up four times, when there will be eighteen inches of soil earthed up over each seed Potato. It should be remembered that the soil must be taken from the furrows running east and west as soon as those running north and south have reached the depth of the original furrow. The object in view is to keep up the system of drainage,

which would be quite deranged if the levels were altered. Hence the necessity of having the cross lines of furrows half-an-inch or an inch higher than the drainage furrows.

This is the German plan of cultivation; and having tried it for two seasons with great success, we confidently recommend its adoption. The advantages of the system are manifest. As soon as the seed Potato throws out roots, it meets with a suitable supply of plant-food of the best and richest description, and as the main stem throws out long thin roots, each of which should have a young Potato at the end, it stands to reason that the greater the number of lateral fruitful roots thrown out by the growing plant, the greater the number of the Potatoes produced; and as the regular and regulated earthing-up system induces the main stem to throw out lateral roots, the extra time and labour are amply repaid by the resulting heavy Potato crop. When the Potato-plant produces a large number of flowers, it is a certain sign of the soil being poor in lime and other mineral matters; and cutting them off, or the Potato-apples, will do no good. We speak from experience, for, eighteen years ago, and before we entered on the study of scientific agriculture, we put the matter to the test on by no means a small scale, and were considerably disappointed at the result.

The old plan of growing Potatoes is as follows, viz. :—  
 “A Potato is so cut with a sharp knife that at least two eyes are left in each part for seed.” That end of the Potato by which it is attached to the parent plant is called the Root-end, and the opposite extremity the Rose-end. The root-end should not be used for seed, but be given for food to live stock. The rose-end is the best for seed; and if all are collected and sown in furrows by themselves, the resulting Potatoes will generally equal the parental stock. The body of the Potato (after the removal of the ends) may be cut into

three, four, or more pieces, according to its length; and if the middle cuts are large and contain four or more eyes, each should be cut so as to form two sets, each being supplied with two or more eyes. Thus, if there are five of them in the original cut, its sub-division will contain two and three eyes respectively, each bit being called "a set." This explanation should be borne in mind when the produce of Potatoes raised from sets is brought to notice further on. The ground having been duly prepared, is to be drilled for the reception of the manure (as explained for Beans), which is to be spread in the drills by one set of labourers (men and women), whilst the second set plant the Potato sets upon the manure, at regular distances, from hand-baskets. The space between sets should never be less than eighteen inches. The sets being planted, are to be covered over with soil by the first gang of labourers, and formed into ridges and furrows. The subsequent culture consists in earthing up the plants once or twice. This style of cultivation is now chiefly followed by the Irish and old-fashioned English farmers in England. The natives of India, both in the hills and plains, cultivate the Potato in like manner; and it is to induce all parties concerned (European and native) to abandon this plan that we have advocated the German system, and now draw especial attention to Dr. Wrenford's system, which is admirably adapted for garden culture in the hills, and in all places where the maximum of produce is required from the minimum of space. The Wrenford plan is described as follows, viz.:—"A pit was dug three feet deep, and manure and soil put in, reducing it to two feet. The Potatoes were planted whole in this pit, covered with two inches of soil, and as they grew, the pit was gradually filled up to the surface, the haulm being pegged down. Twenty-six Potatoes were planted in this manner in as many excavations, and when the crop

was dug up, 627 tubers were produced weighing 312lb and 12oz. Of these, the largest Potatoes weighed 2lb 2oz., and 81 were over 1lb each, the others varying in weight from 2oz. to 10oz. Of the entire crop, 57 only were small, *i.e.*, from 1oz. to 1½oz. in weight. This result amazed the north countrymen greatly, and the success of the experiment appears to be due to deep planting.

The experiments of the Rev. G. Hopton Scott (of the Vicarage, Gringley-on-the-Hill, Axholme), concluded in November, 1871, show most conclusively that the poor man would come to considerable grief if he cultivated certain Potatoes which the rich only could afford to grow.

This gentleman experimented on twelve kinds of Potatoes, using 1lb of each for sowing. Some of the kinds mentioned were cut up and sown as sets (the memorandum of produce from sets is not with us), and the others were put down entire, and, to the best of our recollection, the Bovinias and Red-skinned Flour Ball were amongst those which were planted whole.

The result is given below in a tabular form :—

| Names of Potatoes. |                          |     | Produce.    | Cost per pound in<br>Carter's shop,<br>London. |
|--------------------|--------------------------|-----|-------------|------------------------------------------------|
|                    |                          |     | lb. oz.     |                                                |
| 1.                 | Ash-leaf Kidney          | ... | 7 12        | 9d. per lb.                                    |
| 2.                 | Holbery's Kidney         | ... | 8 13        |                                                |
| 3.                 | River's Royal Ash-leaf   | ... | 10 14       |                                                |
| 4.                 | Myatt's Prolific         | ... | 12 0        |                                                |
| 5.                 | Prince of Wales's Kidney | ... | 6 6         |                                                |
| 6.                 | American Rose (London)   | ... | 20 0        |                                                |
| 7.                 | American Rose (Ounseed)  | ... | 33 1        |                                                |
| 8.                 | Patterson's Victoria     | ... | Mostly bad. | 8d. per lb.<br>5s. per 14lb.                   |
| 9.                 | Red Rounds               | ... | 8 8         |                                                |
| 10.                | Dunbar Regents           | ... | 13 12       |                                                |
| 11.                | Bovinias                 | ... | 31 4        |                                                |
| 12.                | Red-skinned Flour Ball   | ... | 40 5        |                                                |

The superior crop is thus described:—The Bovinias have produced 31lb of tubers, the large ones ranging in weight from 1lb 2oz. to 3lb 3oz. each. Amongst the crop was a monster weighing 7lb 14oz. The Red-skinned Flour Ball has produced 40lb of tubers from 1lb of seed Potato; and the American Rose Potato has given 33lb for one put down.

When the Potatoes are ripe, the tubers are taken out of the ground by hand with a Potato-graip. This very useful implement is provided with four or more prongs some nine inches in length, and is used as a spade by a man, who pushes it into the side of the drill, and, on raising the Potato-plant, turns up the Potatoes to the surface. A woman follows, and gathers up the Potatoes in a basket. The basket, when full, is emptied by her into sacks or into a cart, if one be near at hand. The above is the proper way of lifting Potatos. The Indian way is to dig them up with pick or hoe, and as a natural consequence, numbers are cut into halves, as many injured, and a considerable number are lost. Potatoes should always be lifted in fair weather, and never in the rain or frost. We have sometimes left Potatoes in the ground through the winter (Simla), and have taken them up in March following without their being any the worse for it. We mention this, as if men are not procurable and rain has fallen, the best plan is to leave the crop in the ground.

“Potatoes, on being lifted, are stored in pits, which are low triangular piles placed upon a piece of dry ground. A thick layer of straw covers the pits. Earth is put upon the straw with a spade, and beaten smooth.”—*Professor H. Stephens*. The Indian (hill) plan of storing Potatoes is to dig a large hole and fill them into it; straw is spread over them, and the hole filled up with earth, trodden, and beaten down. When opened in April, most of the tubers have sprouted,

owing to the increasing warmth of the soil having forced their growth. Such Potatoes, though well adapted for immediate planting, are barely fit for the table. The owner thinks otherwise, and as the *bunneeah* or wholesale purchaser is of the same opinion, a bargain is concluded; the vendor and his family, assisted by friends, snap off the sprouts, the tubers are placed in the purchaser's sacks, and in due time retailed to the servants of the European consumer. It is immaterial how often the sprouts re-appear, for the indefatigable *bunneeah* is equal to the occasion, and removes them with the utmost patience and assiduity. These unwholesome tubers are cooked and eaten daily by ladies, gentlemen, and children, and, as a natural consequence, produce alvine fluxes, for which the hill water is always blamed—the bad Potato never. We have often heard economical house-keepers (ladies) order Potatoes which were unpalatable when simply boiled, to be mashed and seasoned with salt, pepper, and butter, and so served to the unsuspecting members of the family and guests, who were pretty certain to suffer from the consequences.

We advise all who desire to keep their health, never to eat mashed Potatoes in May and June made from last year's crop. In the hills, the new or early Potatoes come in during May, and being high priced, are avoided by false economists. The old crop is now sold off very cheap, and those who buy them at 20 seers per rupee have generally to pay a heavy chemist's bill.

The value of the Potato as food for man and domesticated animals is very great. Hence, if Potatoes could be preserved in a sound state from year to year, a very great point would be gained.

We were determined to solve the problem, and after several experiments—which, though more or less successful, were costly—we hit upon a simple, expeditious, inexpensive, and effectual plan for preserving the entire substance of the Potato; and as the process increased the nutritive value of the tuber, we were satisfied with the result, and brought it to the notice of the Agri-Horticultural Society of India, in whose “Proceedings” it was duly published. As this portion of our work would not be complete if instructions on Potato preservation were withheld, they are given below:—

1st.—Any time after the 20th of March, take any quantity of Potatoes out of the store, and wash them clean, placing them on mats to dry.

2nd.—Have ready a sufficient quantity of *oord dāl* meal made by grinding this *dāl* in a common *chukee*, or hand flour-mill. The meal should be sifted before use to get rid of the *dāl* husk or skin. When this *dāl* is not procurable, Peas meal will do, or Gram meal, if Peas are not available.

The other things needed are, two or more large-sized flour-dredgers, six coarse sheets or old *durries* of small size, six flat baskets lined with bamboo mat-work, twelve common baskets of the largest size, four sharp knives, and as many bits of board about a foot long and six inches broad. Four intelligent workmen and as many coolies will have to be in attendance.

3rd.—The Potatoes, when dry, are to be brought in large baskets to the four workmen, who will commence operations by cutting off the two ends of each Potato; the rose-end to be preserved for sowing, and the root-end to be kept separate for cattle food. This done, the body of each Potato is to be cut into slices a quarter of an inch thick; this thickness is to be preferred, as if the sun be hot and

clear, the preservation can be finished by 5 p.m., otherwise a second day's exposure is necessary.

4th.—The sliced Potatoes are to be so cut as to drop into the flat baskets in the act of cutting, and, when filled, these are to be removed to where the sheets have been spread. The coolies are then to spread the slices over the sheets, placing them as close as possible without touching. When the Potatoes are being sliced, one or two coolies should be instructed to dredge *dall* meal freely over each sheet, so that the sliced Potatoes will be placed on what is technically called a "floured cloth." The slices being spread thereon, will, as a matter of course, take up as much *dall* meal as will adhere to their lower surface. The upper surface is to be dredged over with the meal, which will adhere and set at once. If the sun be hot, in two or three hours the upper surface of each slice will be covered with a film of dried and hardened *dall* meal, and the lower with a similar film, only not quite dry. It is now time to remove the slices from the sheets into the large baskets, which are to be placed in the sun; and by sunset the drying will be complete and the preservation of the Potato be accomplished.

If work be commenced at 6 a.m., three batches of Potatoes should be ready by 12 o'clock, and two more between 1 p.m. and 5 p.m., at which hour cutting operations should cease. The three last batches should be exposed next day to the sun until dry, and all should be stored or piled on bamboo trellis-work (*jaffree*) covered with matting, so as to be brought under the influence of the dry hot air of the period. The drying process is considered complete when the slices are as brittle as biscuits. If one be broken, a white interior between two dark lines will be brought to view. The white is the starch of the Potato with its contained gluten;

the two dark lines are films of *dall* seen in transverse section; the outer brown line is formed by the dried skin of the Potato.

The analysis shows that 100lb of raw Potatoes contain 25lb of solid matter, 2lb being gluten, and starch being represented by 19lb. This preponderance of breathing material (starch) greatly reduces the value of the Potato as an article of food. To remedy the defect, we have called in the agency of *dall* meal, every 100lb of which contains 24lb of gluten, or blood, and flesh-forming material. Hence, if a given quantity of Potatoes take up 24lb of gluten, their nutritive powers are increased in proportion. If the 100lb of raw Potatoes have taken up 10lb of *dall* meal, their nourishing powers are more than doubled, for that quantity of the meal contains 2lb 6oz. of gluten. By bearing these things in mind, the scientific farmer and gardener can secure an immense supply of first-class cattle food for a very small sum of money, whilst the man who does not know how to preserve his Potatoes, is compelled to sell them, as soon as possible, to the *bunneahs* for what they will fetch.

The ryot or zemindar who cultivates an acre of Potatoes and preserves them, is supplied with wholesome nourishing food for months. To use it he has only to soak them in water till they soften, when the skins may be easily removed and the edible portion remains, and it may be boiled and eaten as porridge, baked and used as a vegetable, or be made into a *curry*. The dried slices may be ground or pounded down to a meal, and after the broken fragments of skin have been removed by means of a sieve, the sifted flour may be kneaded into dough with hot-water, and converted into *chupp-ties*, or unleavened bread, in the usual manner.

We trust the information we have supplied will be of use to the European tea, sugar, and indigo-planter, and if they will grow the Potato *secundum artem*, the Hindoos will soon follow their example, and be greatly benefited by so doing.

In the plains, the late kinds of imported Potato only should be cultivated. The season for sowing commences as soon as the rains are well over (September), and terminates in the last week of October.

Before describing the superior kinds of Potato now cultivated in England, we would wish to invite the reader's attention to the following information on growing Potatoes from sets, as such knowledge comes of value when it is desired to make the most of one or two Potatoes, supposing two tubers of each kind are all that could be sent out for a small sum of money; the object in view being to secure a good supply of seed Potatoes for future use:—

#### POTATO CULTIVATION FROM SETS.

Mr. J. Harland, gardener to C. Pelly, Esq., of Writtle Park, Chelmsford, reports:—"I planted 1lb weight of each of the following sorts, viz. :—

1lb EARLY ROSE in 40 sets produced 72lb.

1lb CLIMAX            " 62   "            "   60lb.

1lb PEERLESS         " 57   "            "   86lb.

This last Potato has been experimented on by other growers (*Gentlemen's Gardener*), and produced from 1lb to 51½lb as the lowest, and 59lb as the highest yield.

Potatoes are divided into Late and Early, and the best kinds are as follows:—

#### EARLY POTATOES.

##### 1. THE (AMERICAN) EARLY ROSE.

2. BRESEE'S CLIMAX.—"1lb produced 52lb of first-rate Potatoes."

3. BRESEE'S KING OF THE EARLIES, OR FIFTY-DOLLAR POTATO.—1lb produced 45lb.

4. EARLY GOODRICH POTATO.

5. CARTER'S ASH-TOP FLUKE POTATO.—"For table purposes it has no equal."

6. CARTER'S CHAMPION EARLY FORCING POTATO.

7. EARLY GIANT KING.—"Very prolific, and larger than any other first Early Potato."

8. EARLY RACE-HORSE.

9. RIVER'S ROYAL ASH-LEAF.—The largest and most prolific Early Potato.

#### SECOND EARLY POTATOES.

1. HEADLEY'S NONPAREIL.—"A heavy cropper; bulk medium-sized, and handsome; and it ripens off completely immediately after the first early sorts."

2. GLOSTERSHIRE KIDNEY.—"A capital variety to succeed the Ash-Leaf."

3. RED ASH-LEAF.—One of the best red-skinned Kidneys.

4. WEBB'S IMPERIAL, OR DAWES'S MATCHLESS.—An immense Potato, and very productive.

5. CARTER'S CAMBRIDGESHIRE KIDNEY.—"A Potato of enormous size, and the largest Kidney Potato fit for the table."

6. GOLDEN BLOSSOM.—A very cropper, so called from its bright golden appearance.

#### LATE AND MAIN CROP POTATOES.

1. AMERICAN PEACH BLOW POTATO.—A heavy cropper.

2. LATE ROSI.

3. BRESEE'S PEERLESS.—"Its increase appears almost incredible."

4. BRESEE'S PROLIFIC POTATO.—Average produce 44lb for 1lb of seed.

5. PATERSON'S BOVINIA, OR CATTLE-FEEDER POTATO.—This is a Kidney-shaped Potato, and contains a large amount of farinaceous matter. It grows well on land on which neither Mangold-wurzel nor Turnips will answer, and its ordinary produce is 20 tons per acre.

6. CARTER'S MAIN CROP.—Very highly recommended.

7. DELMAHOY.

8. THE FLOUR BALL.—A white variety of fine flavour, and very mealy.

9. THE FORTYFOLD.

10. THE QUEEN'S.—This is the variety principally grown for the royal table. It is a good cropper, and unsurpassed in quality.

11. THE RED REGENT.—This is best adapted and recommended for heavy soils, and would grow well in the plains in clayey lands.

12. THE RED-SKINNED FLOUR BALL.—Is especially recommended for field cultivation, and for market purposes. It has an extremely robust constitution, with immense productiveness, and fineness of quality and flavour. (None but prize-takers have been selected.)

## THE YAM.

The natives of Upper India call all kinds of Yam *Rut-aloo*, but the people of Bengal have specific names for each kind of *Dioscorea* or Yam, of which Dr. Roxburgh describes seven edible kinds, as follow:—

1. CHOOPREE ALOO (*D. globosa*).—This Dr. Roxburgh states to be "the most esteemed of all Yams among the natives

as well as Europeans." I cannot say that tubers I have purchased from the bazar under the name of *Choopree Aloo* seem to merit this distinction. Others appear to me to be superior.

2. *KHUM ALOO (D. alata)*.—This is accounted second in order of merit.

3. *RUKTO GURANIYA ALOO (D. purpurea)*.—This apparently is the Yam brought by Mr. McMurray, gardener to the Agri-Horticultural Society, from the Mauritius, concerning which he states that it is as much cultivated in the Mauritius as Potatoes are in England, and that it is most excellent. The tuber is of a dull crimson-red outside, and of a glistening white within.

4. *GURANIYA ALOO (D. rubella)*.—A common but very excellent Yam, as good as any perhaps in cultivation. The tuber is of great size, crimson-red on the outside, and of a glistening white within.

5. *MALACCA YAM (D. atropurpurea)*.—Known also, I believe, in Calcutta as the Rangoon Yam; is very similar to the last, and an excellent Yam. A tuber of this was sent to the Agri-Horticultural Society from the garden of Captain H. B. Weston, measuring two feet in length, and weighing as much as eight seers.

6. *CHINESE POTATO (D. Japonica)*.—Sent to this country by Mr. Fortune, but possessing no merit that I can see above the two last kinds, which it much resembles.

7. *SOOSNEE ALOO (D. fasciculata)*.—A very distinct kind of Yam; the tubers are about the size and form and colour of large Kidney Potatoes, and, when well cooked, bear a greater resemblance in mealiness and flavour to the Potato than any other Yam I know of.

8. *NEW ZEALAND YAM (D. lpa)*.—Presented to the Agri-Horticultural Society by Captain Hill, of Bankshall

and remarkable for producing great ash-grey aërial tubers upon its stems.

From the account Captain Hill gives of it when cooked, it is more to be regarded as a curiosity than for any value it possesses for the table. It has been grown in the Barrack-pore Park, and found to be exceedingly prolific. Yams should be put in ground in April, the soil having been previously dug deeply and well lightened with old manure, so that the tubers may be able to expand freely. The plants are extensive trailers, and are usually grown where they may have some tree to run up, or else have a bamboo trellis placed for their support. The crop will be ready for digging up in December.

The proper mode of cooking Yams, as I believe is pretty well known to all Indian cooks, is, after the tuber has been boiled, to bury it for half an hour or more beneath the hot wood-ashes. By this means all moisture becomes dried out of it, and it is rendered nice and mealy.

The following directions with regard to the cultivation of the Chinese Potato (*D. Japonica*), given by M. Montigny, the French consul, who sent it from Shanghai to France, no doubt would apply equally well to all other kinds of Yam grown in the country:—"For propagation, the smallest roots are set apart. In the spring, the roots are taken out and planted in furrows pretty near each other, in well-prepared ground. They soon sprout, and form prostrate stems, which are made into cuttings as soon as they are six feet long. As soon as the cuttings are ready, a field is worked into ridges, along each of which is formed a small furrow, in which the pieces of the stem are laid down and covered with a little earth, except the leaves. If the weather is rainy, the cuttings strike immediately; if dry, they must be watered till they

do strike. In fifteen or twenty days the roots begin to form, and at the same time lateral branches appear, which must be carefully removed from time to time, or the roots will not grow to the proper size.”—*Firminger*.

### THE SAUG.

The succulent leaves of certain Indian vegetables are called *Saug* by the native population. They are by no means unpalatable when properly dressed; and as many Europeans are very partial to *Saug bhooj-jee-ah*, we supply information as to its cultivation. The *Saug* (*Amaranthus oleraceus*) and its varieties are extensively cultivated by the natives all over India. The plants are fit for use during the rains. The part eaten is the soft succulent stem, which is sliced into small pieces and dressed in the manner of French Beans—to my taste, a most insipid vegetable, hardly acceptable even when nothing else in the way of green vegetable is to be had. Dr. Roxburgh says:—“There are several varieties cultivated as pot-herbs, of which the following are remarkable:—

“*α. VIRIDIS*.—The common green sort most cultivated.

“*β. RUBER*.—A beautiful variety, with a clear bright-red stem; branches, petioles, nerves, and veins, and the leaves themselves, rather rust-coloured.

“*γ. ALBUS*.—All the parts that are red in *β ruber* are here of a clear shining white colour. Much cultivated in Bengal.

“*δ. GIGANTEAS*.—Five to eight feet high, with a stem as thick as a man’s wrist. The tender succulent tops of the stems and branches are sometimes served at our tables as a substitute for Asparagus.”

The *Lall Saug* (*Amaranthus Gangeticus*) is, in our opinion, the most palatable of all the *Saug* tribe. Of it

Dr. Roxburgh says as follows, viz. :—" Varieties of this species—many tolerably permanent—differing chiefly in colour from green, with the slightest tinge of red, to rufous, liver-coloured, and bright-red. They are more generally used among the natives of Bengal than any other species or variety."

### THE CAPSICUM.

The Hindee word *Mirrich* is applied by natives to all kinds of Pod Pepper, the black variety being called *goll*, or round, *Mirrich*. The following kinds are cultivated in the hills and plains at discretion, viz. :—

- |                                    |                                        |
|------------------------------------|----------------------------------------|
| 1. C. FRUTESCENS (or Goat Pepper). | 4. C. GROSSUM (or Bell Pepper).        |
| 2. C. BACCATUM (Bird Pepper).      | 5. C. FASTIGIATUM (or Cayenne Pepper). |
| 3. C. ANNUUM (or Chilli).          |                                        |

There are two principal kinds of Capsicum—the larger, with fruits of the length of a man's forefinger, usually termed, for distinction, Capsicums; and the smaller, with fruits about an inch-and-a-half long or less, usually called Chillies. The seeds of the latter, when ground, form what is ordinarily called Cayenne Pepper.

There are a great many varieties of Capsicum grown in India, some of which are very ornamental when grouped together and bearing their crops of pods of different shapes and colours,—some orange, some bright-red, some pale-amber, and some purple-black. One in particular bears a remarkably beautiful fruit, fully of the size of a large lemon, perfectly smooth, and of a fine amber-like appearance.

"For ordinary purposes, however, only two are required in the garden: the common country kind *Lál Mirrich*, and the

very small sort called Bird's-eye. The latter is of a most fiery, pungent nature, and is used principally for making Chilli-vinegar. The seed may be sown at any time of the year. The plants bear fruit at all seasons; they do well in any common garden soil, and thrive best in a shady spot."—*Firminger.*

### THE HORSE-RADISH.

The Horse-radish, called *Billatee Sunjhunna* by the *mallees*, is now by no means uncommon in the plains. The Horse-radish (*Cochlearia armoracia*) is propagated by burying pieces of the root an inch-and-a-half long, a foot deep in the ground, which, by a year or two after, will grow up and reach the surface, and then be fit for taking up for use. I have tried this method here, but have not been successful with it, as the spieces of root I deposited below the ground, I found, in a very short time perished. The plan I then resorted to with perfect success was as follows:—Place round the sides of a flower-pot filled with mould well lightened with silver sand, pieces of the roots, of the thickness of a quill and two inches long. These being kept watered, quickly sprout and form rooted plants. Dig holes a foot-and-a-half deep, ten inches wide, and a foot apart, on a piece of high ground. Till the lower half-foot with well-manured soil, and the remaining upper foot with a light mellow soil, and put one of the plants in each. When they have been established about a week or two, remove the earth from the roots, and clear away all the small fibrous roots that have formed, leaving only one main root to proceed downwards. Repeat this three or four times at intervals, removing the earth deeper each time for the purpose.

When the main root has descended about a foot deep, which it will do in a very short time by being cleared of all fibres upon it but those at its very extremity, it will have reached the rich soil at the bottom of the hole. Remove, then, the uppermost foot of soil, and fill in with silver sand. This answers two purposes: the water given to the plants will immediately sink down through the sand to the roots, where it is alone wanted; and the main stem of the root will not be induced to form fibres on its sides. The roots will be ready for use in about four or five months' time. This plan may seem troublesome, but it is not very much so in reality. The Horse-radish, however, may be grown, like any other ordinary plant, by merely putting out the plants in a good soil, on a high piece of ground, at the distance of a foot or more apart.—*Firminger*.

### THE GARDEN MINT.

The *Poodeena*, or Garden Mint (*Mentha viridis*) of India, appears to be a different variety, if not a different species, from the well-known herb of that name of the English gardens. The Indian Mint has a roundish crimped leaf, not longer than broad; very deficient in flavour, especially when cooked. The true English Spearmint has leaves comparatively smooth and, as its name denotes, lance-shaped—more than twice as long as broad. I brought down plants of this latter kind from Ootacamund and introduced them into my garden at Chinsurah, where they throve vigorously; but I found that the herb lost, in course of time, the full strength of scent and flavour which it possessed when grown in the hills, and became no better for culinary use than the common Indian kind, which I had displaced for it.

“The plant is most easily propagated by division of the roots. Every sprig nearly will strike if planted in a damp, shady situation.”—*Firminger*.

---

### THE PEPPERMINT.

The Peppermint (*Mentha piperita*), in habit and appearance, much resembles common Mint. “It thrives well in this country, delighting in a good soil and shady situation. It is easily propagated in the cold season by setting out in the ground, and sprigs pulled off from the plants with a small portion of root attached to them, and keeping them well watered and shaded till thoroughly established.”—*Firminger*.

---

### THE BENGAL SAGE.

The *mallees* call the Sage *Shishtee*, and as that of Bengal (*Meriandra Bengalensis*) differs from the true Sage, we describe both plants. *Firminger* says:—“This herb is in general use in Lower Bengal for culinary purposes under the name of Sage, for which, however, it is rather an indifferent substitute. It has much larger leaves, but its appearance is sufficiently similar to lead a casual observer to mistake it for the true Sage of the English gardens. It is easily propagated by division of the roots.”

---

### THE TRUE SAGE.

The true Sage (*Salvia officinalis*) of Europe thrives remarkably well in the Himalayas, but in the plains of India it becomes a very delicate plant, and can be kept alive through the hot and rainy seasons only with great care.

Firminger says:—"It is easily raised from seed in the cold season. The sowing had better not be made before November, or the young seedlings will be nearly sure to damp off and perish. The sowing, moreover, is best made in the open ground, in a well-manured soil, protected from sun and rain by a matting supported on a bamboo frame. When the plants have four or six leaves, they may be thinned out to four inches apart, and the matting removed. By the end of February, they must be transferred to some spot sheltered from the full power of the sun, and protected likewise from heavy rain, or they will be sure to die. There is, however, so much difficulty in keeping them through the hot and rainy seasons, that the best plan, perhaps, is to raise a large number of plants in the cold season, and when they are in full vigour, just upon the approach of the hot season, to pull them up and pluck off the leaves, and having carefully dried them, store them away in well-corked bottles for future use."

### THE MARJORAM.

The Marjoram (*Origanum vulgare*) is a herb of considerable value for use in the kitchen. It grows well in the open ground, both in the hills and plains, all the year through, and requires little or no attention bestowed upon its cultivation. It is best, however, to renew it annually in October, which may be easily done either from seed, or by dividing and putting out in fresh ground the roots of old plants.

### THE THYME.

The Lemon Thyme (*Thymus serpyllurus*) grows remarkable well in the hills, and we have seen vigorous plants

grown in pots at Umballa. In the hills, the seed should be sown early in April; and in October in the plains. The dried leaves of this plant are used in seasonings. The Lemon Thyme is one of the most fragrant herbs of the garden, and is raised from seeds sown in early spring. A dry and rather poor soil seems most favourable to the growth and fragrance of the Thyme, which may be economically grown as a border.

The true Thyme (*Thymum verum*) is cultivated in the same manner.

### THE SAVORY.

There are two kinds—the Water and Summer Savory (*Satureja montana*, or Winter; and *Satureja hortensis*, or Summer). The former is propagated either by slips and cuttings, by separating the lower shoots, or rooted off-sets, in spring; the latter is an annual sown in April, and becoming fit for gathering in the summer and autumn.

### THE MELON.

The *Khurbooja*, or Melon (*Cucumis melo*), is indigenous to India; but the climate of the plains is adverse to the proper development of the saccharine principle, which, under the influence of an intensely hot sun, passes into the equivalent of starch instead of into sugar. The extensive manufacture of sugar from ripe Melons, proves that under a suitable climate the equivalent of starch present in the pulp of the Melon is actually converted into a sweet juice, resembling that of the Sugarcane, and being like it convertible into true sugar. The remarkable and almost intense sweetness of the Melons of Cabul, and especially of the variety called *Surda*, shows that the Melon thrives best in a

cool climate. In the Himalayas we possess such a climate, but accompanied by rains so heavy, that, unless grown under cover, the plants would be speedily killed from an excess of moisture.

The construction of a Melon-house in the hills can be very easily carried out, and as the superior produce would command full prices, the outlay would very soon be made good, and thereafter a considerable profit would be realized by the successful Melon-producer.

Mr. Gilbert, gardener to the Marquis of Exeter, gives us a lesson in Melon culture which deserves the utmost attention. In describing "Gilbert's Improved Victory of Bath Melon," he states :—"This Melon is such a favourite here, that, excepting a few scarlet-flesh, we grow nothing else. This season I planted it in the Melon-house by itself: the house is 28 feet long by 12 feet wide. The first crop we cut seventy-two Melons, averaging 4lb; and this morning I cut six, which makes twenty-four of the second crop; and there are still twenty to thirty hanging. If I did not want the house for Winter Cucumbers, I believe I could keep them on bearing till autumn."

At Mooltan, the Rev. Mr. Firminger informs us that six rupees was offered for a Cabul Surda Melon, and refused: therefore, at one rupee a Melon, a very fair income may be expected from the produce of a Melon-house of the dimensions indicated. There is no necessity for an entire roof of glass; all that is required is a sufficient number of panes, set in spaces of three feet, to admit the sunshine and keep out the rain. The east and west side walls should be so glazed as to admit the rays of the morning and afternoon sun, and the panes of glass used for this purpose should not be more than one foot above the level of the ground. There should

be a common glazed door at the south end, and a small window (glass) on hinges, for the purposes of ventilation, at the north end, the object being to keep out the rain. Bamboo or date-matting may be nailed to the wooden framework of the side walls, or weather boarding would answer still better, if refuse planks were used (these are called *Bugglee tue-ta*), as they would last well, and give a considerable degree of strength and permanence to the structure.

The soil within the Melon-house must be of the best description, rich in lime, potash, and bone-ash, impregnated with sulphate of iron solution. The manure to be used will be a compound of oil-cake reduced to powder, and mixed with pigeons' dung, or, if this is not available, with fowl and duck-manure. If the poultry-house and yard be properly managed, an abundant supply of such manures should always be forthcoming. Pigeons' dung is a very rich manure, and has been used in Persia for ages as a Melon manure. Three parts of such manure are to be mixed with one part (all by weight) of pulverised oil-cake. The leaf-manure worked into the soil is to be enriched with a solution of saltpetre, made as already explained; and the pigeon-manure is to be applied to the circular seed-bed, in which the Melon seed is to be sown. It is not generally known that plants which produce pure starch and sugar in abundance, take out an immense quantity of potash from the soil. Thus, three hectares of land and Potatoes will remove 600lb of potash, and the same extent cropped with Beet-root, 1,120lb (10 cwt.) of this vital salt; and as the Melon is richer in sugar than the best Sugar Beet, it follows that it will require and remove a still larger quantity from the soil, and as no other substance contains so large a proportion of potash as saltpetre, its use and application as a manure is obvious. The Gangetic Hindoo cultivates

The Melon of the country on a river sand-bank, and, having no idea of what a really good ripe Melon is like, is satisfied with its vapid apology. In the Punjab, Melons are grown on good land as a field crop, and with suitable manuring the produce would be improved; but, as previously explained, the intense heat interferes with the maturing process, and we have to be satisfied with a pulp undergoing the process of saccharification, in place of the gradually ripened fruit. We have considered it advisable to make these remarks, to prevent the amateur gardener from being disappointed if the produce of his imported seed does not realize expectation.

In the Himalayas, Melon seed should be sown in the Melon-house any time between the 20th and 30th of April. The seed should be soaked for twenty-four hours in sulphate of iron solution (pickle) and then be sown, like Cucumber seed, in the prepared seed-beds. As the plants rise, observe them carefully, and pick out the central buds, when the true leaves have become strong. This stopping or retarding of the plant's growth requires explanation; and as a celebrated professional gardener, named MacPhail (of Addiscombe, Surrey), has pointed out the true theory and results of stopping, we subjoin his instructions. His first directions are to stop (nip back) the young seedlings at their second joint; then, "when the plants shoot forth after a second stopping, above the second joint of the laterals produced by the first, they seldom miss to show fruit at every joint, and also a tendril; and between this tendril and the showing fruit there may be clearly seen the rudiments of another shoot. This shoot is then an embryo; but if developed it becomes a fruitful lateral. And when the leading shoot has extended itself fairly past the showing fruit, then with the finger and thumb pinch it and the tendril off just before the showing fruit, being careful that

in pinching off the tendril and the shoot the showing fruit be not injured. This stopping of the leading shoot stops the juices of the plant, and enables the next shoot—the rudiment above-mentioned—to push vigorously, and the fruit thereby also receives benefit.”

The Melons should be in fruit in June, and their after-culture is thus described, viz.:—“The soil must never be wet, but always retained in a free and rather moist condition. No water ought to be poured against the stems; it should be applied to the soil, around the slope of the hills only. Air ought to be admitted on all warm days *via* the door and window. Every decayed leaf and weak shoot should be removed as soon as perceived. Remember when fruit is visible, stopping according to MacPhail’s direction should be persevered in, and its fertilising effects will soon be apparent.”

If the plants are attacked by insects or beetles, dredge them over with a mixture of sifted lime, wood ashes, and the common bazar tobacco leaf reduced to powder or snuff—proportions 2 seers each of lime and ashes, and 4 chittacks of tobacco powder; mix and preserve for use in a tin canister.

We now proceed to give a list of the different kinds of Melons cultivated in England, giving precedence to the prize-takers.

1. KING OF ITALY.—A new scarlet-fleshed Melon from Naples, long shape, and more or less ribbed. Its flesh is firm, juicy, and of a very delicious flavour. It grows from 4 lb to 6 lb weight, and is very prolific.

2. GILBERT’S IMPROVED VICTORY OF BATH MELON.

3. LORD NAPIER MELON.—The largest and finest looking Melon ever grown. The flavour is excellent.

4. THE CROCHESTER PRIZE MELON.—Beautifully netted scarlet, very large and flesh of superior flavour.

5. THE SULTAN MELON.—Smooth light-grey skin, olive-green flesh, of exquisite flavour.

6. THE HARDY RIDGE MELON (*Achapesnorrischer*).—This Melon ripens during the first week in August, and continues in fruit to the end of September. The fruit varies in size from 4lb to 7lb. The flesh is a bright-orange, firm but melting, juicy, sweet, highly-flavoured, and eatable down to the rind. The fruit is round, rough-skinned, and slightly mottled.

7. COX'S GOLDEN GEM MELON.—This is a white-fleshed Melon of very superior excellence. It is of large size, and very beautifully mottled.

8. THE BEECHWOOD.

9. BOUSIE'S INCOMPARABLE.

10. BROMHAM HALL.

11. CARTER'S EXCELSIOR.

12. GOLDEN QUEEN.

13. GOLDEN BALL.

14. MALVERN HALL.

15. BAILEY'S ECLIPSE.

16. MCEWEN'S SCARLET FLESH.

17. ROYAL ASCOT.

18. DOCTOR HOGG.

19. THE HYBRID CASIMERE.

We have left out all other kinds in order to work to a conclusion.

see this

