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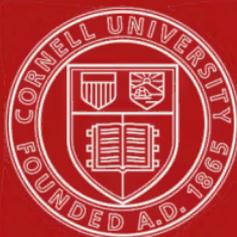
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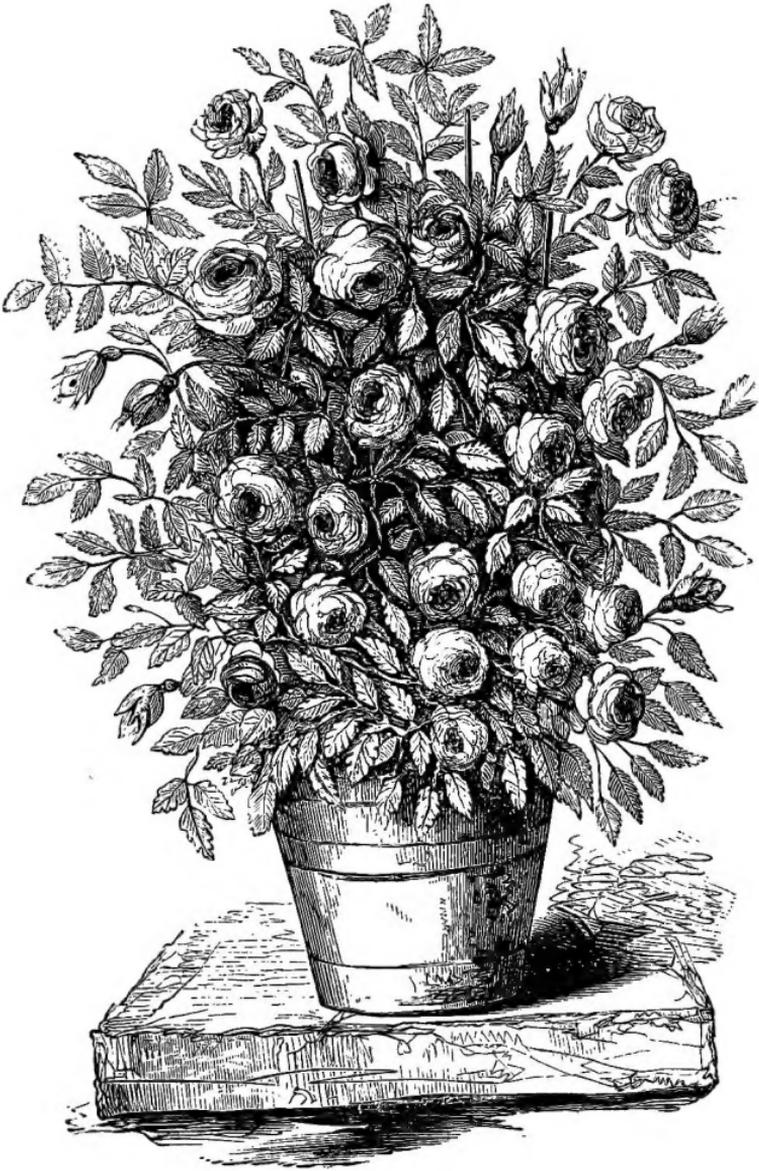
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THE  
GARDENS, POULTRY, AND BEES;

EMBRACING

- I. The Kitchen-Garden.**—WHAT TO GROW, AND HOW TO GROW IT.  
**II. The Fruit-Garden.**—THE FRUITS TO SELECT, AND HOW TO CULTIVATE THEM.  
**III. The Flower-Garden.**—HOW TO CULTIVATE ALL OUT-DOOR FLOWERS.  
**IV. Poultry.**—THE VARIOUS KINDS, AND HOW TO MANAGE THEM.  
**V. Bees.**—THEIR HABITS AND MANAGEMENT.

FROM THE LATEST AND BEST AUTHORITIES.

EDITED BY E. G. STORKE.

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# P R E F A C E

TO THE

## GARDENS, POULTRY, AND BEES.

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THE following pages will be found to contain much valuable and important information at little cost. An examination of what they contain will, it is believed, not only verify the truth of that remark, but also satisfy the reader that it will be to him a very convenient and profitable hand-book, in which he will find just the every-day facts, suggestions, experiments, and instructions, needed in the planting, cultivation, and management of the *Kitchen*, *Fruit*, and *Flower Gardens*, and in the keeping of *Poultry* and *Bees*.

Were this little work in the hands of every American lad and miss, in town or country, it could hardly fail of inducing them to form early and correct habits of cultivating vegetables, fruits, and flowers, and of properly and profitably managing poultry and bees.



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## THE KITCHEN-GARDEN.

WE shall take up little space in considering the situation or form of the kitchen-garden. Every body knows that the best situation, where any choice can be had, will be selected; that the farms will be as variant as the scenery, and the soil the best furnished by the locality. These subjects, therefore, need not occupy our space, or the reader's time. It is of more importance to know how to improve the soil, to cultivate and plant it properly, at the right seasons, and with the proper vegetables. These subjects will be illustrated as we consider *what vegetables and fruits to cultivate, and the best methods of their cultivation.*

**PREPARATION OF THE SOIL.—General Hints.**—To prepare your ground, it will be necessary to trench, manure, and dig it, till it becomes thoroughly broken and incorporated, and of a temperament sufficiently porous to allow the wet to pass freely through it.

When thus prepared, divide and lay out your ground to the best advantage; generally speaking, if you have walls, a border all round, of three, or four, or ten feet (according to the size of the whole piece of land), with a walk next, and then the remainder allotted into regular compartments, or quarters, for the principal crops, is found the best way of laying out a kitchen-garden; but if it be only inclosed by a hedge, it is by far the best to make a walk all round against the inside of the hedge.

The soil of a garden should be frequently pulverized or broken, by proper digging, in order that it may be sweet, free, and rich, or no great things can be expected as to forward, well-flavored, handsome productions. The soil should be sweet, that the nutriment which the roots receive may be wholesome; free and light, that they may be at full liberty to range in quest of it; and rich, that there may be no defect in food.

It must be remembered that vegetables cannot, like the animal creation, range from place to place in search of food; they can grow only where planted—consequently they must be supplied by different means with food, and that according to their different habits and constitutions.

Trenching and pulverizing the soil in autumn and winter (and indeed at all times when the ground is vacant), greatly improves it, and that in proportion to its adhesive texture; being indispensably necessary for strong land, to separate and ameliorate the parts. This amelioration and separation of parts is principally effected by frost, which circumstance may be explained on the principle that the expansion of the water contained in the soil during its freezing increases about one-twelfth its whole bulk, and in its contraction of bulk, during a thaw, leaves the parts so extended that they separate from each other, and so make the soil porous and open to the influence of the sun and air.

The object in pulverizing the soil is to give free and sufficient scope to the roots of vegetables, which should be abundant; otherwise no plant will become vigorous, let the soil in which it is planted be ever so rich. The fibers of the root take up the nutriment they meet with in the soil by absorption, or suction, the end of every fiber having a kind of mouth,

termed a sponge-let, which absorbs moisture in the same manner as a very fine sponge, and the quantity taken up does not depend alone on the quantity in the soil, but in the number of absorbing fibers, consequently, the more fibers a root may throw out, the more vigorous does the plant become. Upon the same principle, pulverization is of advantage not only previous to sowing and planting, but is found considerably so during the progress of vegetation, when applied by hoeing in the intervals among the plants while the crop is standing.

The time for sowing or planting is the spring months for the principal crops; but some few kinds require to be sown earlier, and some later, for succession. It is the better way not to keep the same plants always to the same places, but to change their situation in the garden, so as to allow the ground to regain by one kind of crop what it may have lost by another.

Cabbages, cauliflowers, and other plants of the same description, require the soil to be of a rich loamy nature, occasionally well manured with good manure, or enriched with the refuse of a melon or cucumber bed. Vegetable mould, made from decayed or rotten leaves, and general garden refuse heaped together, and occasionally turned till the whole is reduced to a state of black earth, is also excellent for broccoli, savoys, cabbages, cauliflowers, borecole, or the like. Beds of this kind of soil are also well adapted for the rearing of asparagus and artichokes.

Plants of the preceding kinds are principally raised from seed, set early, either in sheltered situations or in a hot-bed, and transplanted when of a sufficient size, the more tender kinds under hand-lights, and the more hardy into the open ground. The seeds are also set late for winter crops, or for succession in spring. They are mostly biennials, and comprise the following in all their varieties: cabbages, Savoys, coleworts, broccoli, borecole, and cauliflowers.

In the summer months, plants of these kinds are particularly subject to the caterpillar's ravages. To prevent this wholly is perhaps impossible; but it is not so difficult to check these troublesome visitors, or even to destroy them. When they appear, water each moderately-sized bed twice a week with a pailful of water in which about a pound of salt has been dissolved. This is an excellent antidote against their ravages, and very seldom fails of effect; if prudently used, it also improves the condition of the plants, and accelerates their growth. Another method is, to scatter the powder of unslacked lime thinly over both plants and beds, which not only destroys those insects but enriches the earth also.

Plants of the spinach tribe are annuals; they require a rich, but rather light soil; the round-leaved should be set in the spring months, and also in the summer for succession; the triangular, or winter kind, in September and October for spring. The green-leaved and the large white beet are also cultivated in similar soil and in a similar manner to spinach, principally for succulent leaves.

Esculent roots, or those of the parsnip, carrot, radish, and potato kinds, should be planted in light, dry, sandy loam, of a sufficient depth to allow the roots to penetrate freely into the earth, and yet sufficiently rich to give it a proportionable bulk. Of these, some are annual, and

require fresh planting every year. The esculent roots include the whole of the following, in all their varieties: the beet-root, parsnip, carrot, turnip, salsify, radish, potato, skirret, and Jerusalem artichoke.

Peas and beans are two kinds, dwarfs and runners; they require a good soil, preferring that of a fine loamy nature, and in that kind of earth they thrive well, and yield abundantly. These are annuals, and consequently raised from seed; the more early and hardy kinds are sown in the last two and first two months of the year, either in very sheltered situations, where they can be well protected from the frost and wet, or in frames; the others are sown in succession for constant supplies; thus, by good management, peas and beans, of one kind or other, may be produced during the greater part of the year. The dwarfs require but little management, except hoeing, and the general attention essential to all plants; the runners, on the contrary, must have sticks or supporters, to which they cling, as they sometimes attain to a considerable height.

Broad beans are particularly subject to the fly, or green bug; and when these insects once obtain possession, it is very difficult, if not impossible, to destroy them entirely. Tobacco-water, or salt dissolved in water, as recommended for the destruction of caterpillars on cabbages, has sometimes been found effectual; but the most certain way, and perhaps the only one to be depended on, is to watch their first appearance, and to pick off the part on which they first settle and throw it into the fire or water. This is attended with trouble, it is true; but, generally speaking, this little care is all that is necessary to keep the beans clear of them; for if once they settle on them, they increase so rapidly that in a few days the whole plantation, however extensive, becomes infected, and then all remedies are useless; the loss of the whole crop is certain, and no alternative remains but to cut down every infected plant and commit them all to the flames.

Onions and leeks require a rich, light earth; some are annual, and others are perennial, and, with the exception of the Welch onion, produce bulbous roots, which should be taken up in autumn.

The annuals, which are raised only from seed, are the onion, in most of its varieties, and the leeks. The perennials which are either raised from seed, or propagated by dividing the root, are the shalot, garlic, cives, and tree and potato onion.

Plants of the asparagus and artichoke kinds require beds not only rich but warm; they must also be earthed up, or covered with mats, as it is only the blanched, unexpanded leaves that are eaten; they are tender plants, and will not thrive unless in a rich, warm, moist soil. They are all perennial, and raised by seed, as well as by parting the roots and by cuttings.

Plants of the fruit-bearing kinds require beds similar to the asparagus sorts, and even more attention; some of them, as the melon and several varieties of the gourd and cucumber, do best if started in a hot-bed, and sheltered and attended with the greatest care, from which they may subsequently be removed to the open ground, or a few plants suffered to mature without removal. They are all annuals.

The melon is the most tender, and requires the greatest care; the

seeds are usually sown in a hot-bed, and either remain there to fruit, or are transplanted into pots of rich earth, which are set in beds of tanners' bark, and carefully sheltered from the cold and night air; they fruit in August and September.

Gourds, cucumbers, and tomatoes, or love-apples, should be raised in a hot-bed, and transplanted into warm, sheltered situations; they should, for some time after transplanting, be sheltered from frosts during the most inclement weather. But they thrive best, and produce the finest fruit, when suffered to come to maturity in the hot-bed, with the cover raised during the day in the finest weather, and sheltered only during the colder nights.

Capsicums also come under this denomination, being grown for their seed-shells; they should be raised in a well-prepared, rich soil, and sheltered from the cold nights, as the frost easily, and often fatally affects them.

Mushrooms are raised from spawn in a hot-bed; this spawn is a white fibrous matter, found in lumps of rotten dung, horse-mill tracks, horse-rides, in stables, etc. The beds may be made in August or September.

The aromatic, or small shrub-like plants, or herbs, as they are usually termed, are raised from seeds, or by parting their roots. They grow best in good, rich, light earth. They should be gathered when in flower, and dried in the shade. They are mostly annuals, and require to be sown in the spring; the perennials should also be sown in the spring, and may be propagated by slips and cuttings, as well as by parting the roots.

Sweet marjoram, summer savory, and basil, are raised from seed only.

Chamomile, winter savory, and tansy, are also raised from seed, but may be increased by parting the roots.

Balm, hyssop, lavender, mint, rosemary, rue, sage, winter savory, and thyme, are all raised from seed in the first instance, but may be propagated by parting the roots, and also by slips, cuttings, and off-sets.

Salads and dressing-plants are, with a few exceptions, all annuals, and require a rich soil, similar to that for herbs; they should be frequently sowed, the early kinds in spring, in hot-beds, and the latter sorts in warm borders. The annual kinds are small salad (for which sow cress, mustard, and radish), cos-lettuce, cabbage, corn-salad, mustard, rape, clary, endive, celery, celeriac or dwarf celery, angelica, parsley, purslane, radish, marigold, chervil, coriander, dill, and radish, and nasturtiums for pickling.

The perennials, the whole of which are raised by seed, and may be propagated by parting the roots, and by slips and cuttings, are tarragon, sorrel, fennel, horse-radish, burnet, and cress.

A rotation, or change of crops, is a matter of much importance, as it is well known to most cultivators that each sort of plant requires a somewhat different nourishment, so that one crop may immediately succeed another; but it should be contrived that a wide crop should follow a close one, and then the contrary.

**THE VEGETABLES TO CULTIVATE.**—The vegetables appropriate to the kitchen-garden are: artichokes, asparagus, beans, beet, broccoli, cauliflower, cabbage, celery, cress, cucumber, carrot, early corn, egg-plant,

endive, Lima beans, lettuce, mustard, melons, okra, onions, potatoes, parsley, parsnips, peppers, pumpkin, peas, radish, rhubarb, salsify, squash, spinach, tomatoes, turnip, pot and sweet herbs.

**HOW TO CULTIVATE VEGETABLES.**—Care in the Selection of Seed.—The seeds of some vegetables lose their germinating power much sooner than others; and the following summary of the time that seeds may be kept and safely used, can be relied upon, if the seeds are kept from excess of heat, air or dampness.

	Years.		Years.
Artichoke.....	3	Lettuce.....	3
Asparagus.....	4	Mangle-wurzel.....	10
Balm.....	2	Marjoram.....	4
Basil.....	2	Marigold.....	3
Bean.....	1	Melon.....	10
Bean (kidney).....	1	Mint.....	4
Beet.....	10	Mustard.....	4
Borage.....	4	Nasturtium.....	2
Broccoli.....	4	Onion.....	2
Burnet.....	6	Parsley.....	6
Cabbage.....	4	Parsnips.....	1
Calabash.....	7	Pea.....	1
Capsicum.....	2	Pennyroyal.....	2
Caraway.....	4	Potato.....	3
Carrot.....	1	Pumpkin.....	10
Cauliflower.....	4	Purslane.....	2
Celery.....	10	Radish.....	2
Chamomile.....	2	Rampion.....	2
Chervil.....	6	Rape.....	4
Cives.....	3	Rhubarb.....	1
Corn.....	3	Rosemary.....	3
Corn-salad.....	2	Rue.....	3
Coriander.....	3	Ruta-baga.....	4
Cress.....	2	Salsify.....	2
Cucumber.....	10	Samphire.....	3
Dandelion.....	10	Savory.....	2
Dock.....	1	Scorzenera.....	2
Endive.....	4	Shalot.....	4
Fennel.....	5	Skirret.....	4
Garlic.....	3	Sorrel.....	7
Gourd.....	10	Spinach.....	4
Hop.....	2	Squash.....	10
Horse-radish.....	4	Tansy.....	3
Hyssop.....	6	Tarragon.....	4
Jerusalem artichoke.....	3	Thyme.....	2
Kale.....	4	Tomato.....	2
Kale (sea).....	3	Turnip.....	4
Lavender.....	2	Wormwood.....	2
Leek.....	2		

**Saving Seed.**—This is a most important branch of the gardener's business.

First, the truest plants should be selected; that is to say, such as are of the most perfect shape and quality. In the cabbage we seek a small stem, well-formed loaf, few spare, or loose leaves; in the turnip, large bulb, small neck, slender-stalked leaves, solid flesh, or pulp; in the radish, high color (if red or scarlet,) small neck, few and short leaves, and long top; the marks of perfection are well known, and none but perfect plants should be saved for seed. The case is somewhat different

as to plants, which are some male and others female, but these present exceptions, to be noticed under the names of such plants.

Of plants the early coming of which is a circumstance of importance, the very earliest should be chosen for seed; for, they will almost always be found to include the highest degree of perfection in other respects.

Effectual means must be taken to prevent a mixing of the sorts, or, to speak in the language of farmers, a crossing of the breeds. There can be no cross between the sheep and the dog; but there can be between the dog and the wolf.

There can be no cross between a cabbage and a carrot; but there can be between a cabbage and a turnip; between a cabbage and a cauliflower, nothing is more common; and, as to the different sorts of cabbages, they will produce crosses, presenting twenty, and perhaps a thousand degrees, from the early York to the Savoy. Turnips will mix with radishes and ruta-baga; all these with rape; the result will mix with cabbages and cauliflowers; so that, if nothing were done to preserve plants true to their kind, our gardens would soon present us with little beside mere herbage.

**To Test their Soundness.**—To avoid the delays which arise from sowing unsound seeds, it is always best to test their soundness, and to ascertain the proportion of good and poor seeds. This may be done either by putting them into warm water, in which, after they are wetted, sound seeds will sink; or by sowing a sample of them in some convenient vessel of moistened earth, which should be kept in a warm place.

**Sowing.**—The first thing relating to *sowing* is the preparation of the ground. It may be more or less fine, according to the sort of seed to be sown. Peas and beans do not, of course, require the earth so fine as small seeds do. But still, the finer the better for every thing; for it is best if the seed be actually pressed by the earth in every part; and many seeds, if not all, are best situated when the earth is trodden down upon them.

Of course the ground should be good, either in itself, or made good by manure of some sort. But, in all cases, the ground should be fresh; that is to say, it should be dug just before the act of sowing, in order that the seeds may have the full benefit of the fermentation that takes place upon every moving of the earth.

Never sow when the ground is wet; nor, indeed, if it can be avoided, perform any other act with or on the ground of a garden. If you dig ground in wet weather, you make a sort of mortar of it: it binds when the sun or wind dries it. The fermentation does not take place; and it becomes unfavorable to vegetation, especially if the ground be in the smallest degree stiff in its nature.

**Fall Sowing.**—Some, and indeed many things usually sown only in the spring, may, with advantage, be sown in the fall—as *parsnips*, *carrots*, *beets*, *onions*, *lettuce*, *pease*, and all plants that a *slight frost will not cut down*. Care should be taken not to sow early enough to have the plants come up before frosts set in. The seed, in this way, will lie safe all winter, though the frost should penetrate three feet below them. When heavy frosts come on, but not before, the beds should be covered

with straw or litter, kept from blowing away by the most convenient weights, as scantling, rails, planks, etc. We all know what a bustle there is to get in early peas. If they were sown in the fall, they would start up the moment the frost was out of the ground, and would be ten days earlier in bearing, in spite of every effort made by the spring-sowers to make their peas overtake them.

One object of this fall sowing is, to get the work done ready for spring; for, at that season, you have so many things to do at once! Besides, you cannot sow the instant the frost breaks up; for the ground is wet and clammy, unfit to be dug or trenched or trodden upon. So that here are ten days lost. But the seed, which has lain in the ground all the winter, is ready to start the moment the earth is clear of the winter frost, and it is up by the time you can get other seed into the ground in a good state.

**How to Sow.**—Garden plants should be sown in drills. It facilitates cultivation, and it is, upon the whole, an absolute saving of labor. Where seed-drills are not used, the following simple implement, which any one can quickly make, may be used. Cobbett thus describes it:

“Suppose there be a bed of onions to be sown. I make my drills in this way: I have what I call a driller, which is a rake six feet long in the head. This head is made of white oak, two inches by two and a half, and has teeth in it at eight inches asunder, each tooth being about six inches long, and an inch in diameter at the head, and is pointed a little at the end that meets the ground. This gives nine teeth, there being four inches over at each end of the head. In this head, there is a handle fixed of about six feet long. When my ground is prepared, raked nice and smooth, and cleaned from stones and clods, I begin at the left-hand end of the bed, and draw across it nine rows at once. I then proceed, taking care to keep the left-hand tooth of the driller in the right-hand drill that has just been made; so that now I make but eight new drills, because (for a guide) the left-hand tooth goes this time in the drill which was before made by the right-hand tooth. Thus, at every draw, I make eight drills. And, in this way, a pretty long bed is formed into nice straight drills, in a very few minutes. The sowing, after this, is done with truth, and the depth of the covering must be alike for all the seeds. If it be parsnips or carrots, which require a wider distance between the rows, or cabbage-plants, which, as they are to stand only for a while, do not require distances so wide—in these cases other drillers may be made. And what is the expense? There is scarcely an American farmer who would not make a set of drillers, for six-inch, eight-inch, and twelve-inch distances, in a winter's day; and, consisting of a white-oak head and handle, and of locust teeth, every body knows that the tools might descend from father to son to the fourth or fifth generation. I hope, therefore, that no one will, on the score of tediousness, object to the drilling of seeds in a garden.”

**Transplanting.**—The weather for transplanting, whether of table vegetables, or of trees, is the same as that for sowing. If you do this work in wet weather, or when the ground is wet, the work cannot be well done. It is no matter what the plant is, whether it be a cucumber-plant or an oak-tree. One half of the bad growth that we see in orch-

ards arises from negligence in the planting; from tumbling the earth carelessly in upon the roots. The earth should be fine as possible; for, if it be not, part of the roots will remain untouched by the earth. If ground be wet, it cannot be fine; and, if mixed wet, it will remain in a sort of mortar, and will cling and bind together, and will leave more or less of cracks, when it becomes dry.

If possible, therefore, transplant when the ground is not wet; but here again, as in the case of sowing, let it be dug, or deeply moved, and well broken, immediately before you transplant into it. There is a fermentation that takes place immediately after moving, and a dew arises which did not arise before. These greatly exceed, in power of causing the plant to strike, any thing to be obtained by rain on the plants at the time of planting, or by planting in wet earth. Cabbages and ruta-baga (or Swedish turnip) I have proved, in innumerable instances, will, if planted in freshly-moved earth, under a burning sun, be a great deal finer than those planted in wet ground, or during rain. The causes are explained in the foregoing paragraph; and there never was a greater, though most popular error, than that of waiting for a shower in order to set about the work of transplanting. In all the books that I have read, without a single exception; in the English gardening books; in the English Farmers' Dictionary, and many other works on English husbandry; in the Encyclopædia; in short, in all the books on husbandry and on gardening that I have ever read, English or French, this transplanting in showery weather is recommended.

If you transplant in hot weather, the leaves of the plants will be scorched, but the hearts will live; and the heat, assisting the fermentation, will produce new roots in twenty-four hours, and new leaves in a few days. Then it is that you see fine vegetation come on. If you plant in wet, that wet must be followed by dry; the earth, from being moved in wet, contracts the mortary nature—hardens first and then cracks—and the plants will stand in a stunted state till the ground be moved about them in dry weather. If I could have my wish in the planting of a piece of cabbages, ruta-baga, lettuces, or almost any thing, I would find the ground perfectly dry at top; I would have it dug deeply; plant immediately; and have no rain for three or four days. I would prefer no rain for a month to rain at the time of planting.

This is a matter of primary importance. How many crops are lost by the waiting for a shower! And when the shower comes, the ground is either not dug, or it has been dug for some time, and the benefit of the fermentation is wholly lost.

However, there are some very tender plants, plants so soft and juicy, as to be absolutely burnt up and totally destroyed, stems and all, in a hot sun, in a few hours. Cucumbers and melons, for instance, and some plants of flowers. Those which lie in a small compass must be shaded at least, if not watered, upon their removal.

In the act of transplanting, the main things are, to take care not to bury the heart of the plant; and to take care that the earth be well pressed about the point of the root of the plant. To press the earth very closely about the stem of the plant is of little use, if you leave the point of the root loose. I beg that this may be borne in mind; for the

growth, and even the life of the plant, depend on great care as to this particular.

**Cultivation.**—The ground being good, and the sowing or planting having been properly performed, the next thing is the after-management, which is usually called the cultivation.

If the subject be from seed, the first thing is, to see that the plants stand at a proper distance from each other; because, if left too close, they cannot come to good. Let them also be thinned early; for, even while in seed-leaf, they injure each other. Carrots, parsnips, lettuces, every thing, ought to be thinned in the seed-leaf.

Hoe or weed immediately; and, let me observe here, once for all, that weeds never ought to be suffered to get to any size either in field or garden, and especially in the latter. In England, where it rains or drips sometimes for a month together, it is impossible to prevent weeds from growing. But in this fine climate, under this blessed sun, who never absents himself for more than about forty-eight hours at a time, and who will scorch a dock-root or a dandelion-root to death in a day, and lengthen a water-melon shoot twenty-four inches in as many hours; in this climate, scandalous indeed it is to see the garden or the field infested with weeds.

But beside the act of killing weeds, cultivation means moving the earth between the plants while growing. This assists them in their growth. Mere surface-hoeing only keeps down the weeds. The hoeing when the plants have become large should be deep. If any body will have a piece of cabbages, and will dig between the rows of one half of them twice during their growth, and let the other half of the piece have nothing but a flat-hoeing, that person will find that the half which has been digged between, will, when the crop is ripe, weigh nearly, if not quite, twice as much as the other half. But why need this be said in an Indian-corn country, where it is so well known, that without being plowed between, the corn will produce next to nothing.

**Garden Rotation.**—The same species of plants should never be grown in successive crops upon the same ground. The most beneficial plan is where exhausting and non-exhausting crops alternate with each other, as after manure, viz.:

Onions, lettuce, cabbage, carrots, manure; or,

Turnips, celery, peas, potatoes, manure.

The following is also a very good rotation:

1. The cabbage tribe to be followed by
2. Aliaceous plants, as onions, leeks, etc., to be followed by legumes, as beans or peas. Peas may be followed the same year with celery.
3. Tap-rooted plants, as carrots, beets, parsnips.
4. Surface-roots, as onions, potatoes, turnips.
5. Celery, endive, lettuce, spinach, etc.

Celery is excellent to precede asparagus, onions, cauliflowers, or turnips; old asparagus-beds for carrots, potatoes, etc.; strawberries and raspberries for the cabbage tribe; cabbage for the tap-rooted plants; potatoes for the cabbage tribe.

In these rotations it is not necessary to apply manure to every crop. For the bulbous roots, as the onion, plants cultivated for their leaves, as

spinach and asparagus, the ground can scarcely be too rich, and the bulk of the manures may be applied to them and the cabbage and turnip crops; while for plants raised for seed, it is best that the foliage should not be stimulated into too great luxuriance.

**PARTICULAR VEGETABLES.**—We now proceed to give special directions for the culture, preservation and use of the several garden vegetables enumerated at the beginning of this article.

**Artichoke.**—May be raised from seeds, or young suckers taken from old plants in the spring. The best way is to sow the seed early in April, in well prepared soil, in drills one inch deep and twelve inches apart. A cool moist soil suits them best. The plants should be kept free from weeds; and when from nine to twelve inches high should be transplanted into deep and rich soil. The rows should be five feet apart, and the plants two feet distant from each other in the rows. In the north it requires winter protection, which may be given it by dressing the earth around the plants from between the rows, and an addition of a layer of coarse litter. In the spring the litter must be removed and the ground leveled. The strongest stools are left to produce heads and the weaker pinched off. The ground should be dug and manured in the spring. This vegetable is not profitable, and is chiefly grown as a luxury.

**Asparagus** may be raised by sowing the seed in the fall as soon as ripe, or in March and the early part of April. One ounce of seed will produce about a thousand plants. It requires some of the best ground in the garden. The seed may be sown in drills, ten or twelve inches asunder, and covered about an inch with light earth. When the plants are up, they will need a careful hoeing, and if well cultivated, and kept free from weeds, they will be large enough to transplant when they are a year old. Some keep them in the nursery-bed until they are two years old.

A plantation of asparagus, if the beds are properly dressed every year, will produce good buds for twenty years or more.

New plantations of asparagus may be made in autumn, or before the buds get far advanced in spring, say in February, March, or April, according to situation and circumstances. The ground for the bed must not be wet, nor too strong or stubborn, but such as is moderately light and pliable, so that it will readily fall to pieces in digging or raking, and in a situation that enjoys the full rays of the sun. It should have a large supply of well rotted dung, three or four inches thick, and then be regularly trenched two spades deep, and the dung buried equally in each trench twelve or fifteen inches below the surface. When this trenching is done, lay two or three inches of thoroughly rotted manure over the whole surface, and dig the ground over again eight or ten inches deep, mixing this top dressing, and incorporating it well with the earth.

In family gardens, it is customary to divide the ground thus prepared into beds, allowing four feet for every four rows of plants, with alleys two feet and a half wide between the beds. Strain your line along the bed six inches from the alley, the plants to be ten or twelve inches distant in the row, and the rows to be twelve inches apart.

The plants must not be placed flat in the bottom of the trench, but nearly upright against the back of it, and so that the crown of the plants may also stand upright, and two or three inches below the surface of the ground, spreading their roots somewhat regularly against the back of the trench, and at the same time drawing a little earth up against them with the hand as you place them, just to fix the plants in their due position until the row is planted; when one row is thus placed, with a rake or hoe draw the earth into the trench over the plants, and then proceed to open another drill or trench, as before directed; and fill and cover it in the same manner, and so on till the whole is planted; then let the surface of the beds be raked smooth and clear from stones, etc.

Some gardeners, with a view to have extra large heads, place their plants sixteen inches apart in the rows, instead of twelve; and by planting them in the *quincunx* manner, that is, by commencing the second row eight inches from the end of the first, and the fourth even with the second, the plants will form *rhomboidal* squares, instead of *rectangular* ones, and every plant will thus have room to expand its roots and leaves luxuriantly.

In winter, cover them to the depth of three or four inches with rotten manure, to keep the crowns from frost; if in the spring the earth is found to have settled in any part, the deficiency must be made up with more mould. It is a common practice to sow radishes upon the beds, but it is an injurious one, as it robs the ground of a great portion of its nutriment, so essential to their luxuriant growth. The plants are permitted the first two years to run up to stalks, that strong crowns may be formed at their base for the future crop.

After the third year, the beds will require the following mode of treatment. From the middle of October to the end of November give them their winter dressing, which consists in cutting down the stalks close to the ground and clearing the beds from weeds; drawing them off at the same time with a rake into the alleys, to be buried or taken to the compost heap, to be mixed up with other litter and again returned to the soil. Cover the whole of the bed with two or three inches of manure; the alleys must be dug spade-deep, at the same time spreading some soil over the manure on the beds, and leveling the whole evenly. It may be supposed that the annual dressing in this way will in a few years considerably raise the beds; but by the spring forking and raking together, with the hoeing and dressing during summer, a considerable portion of the earth is being continually drawn again into the alleys.

As soon as the frost is fairly out of the ground in the spring, loosen the surface of the beds with a fork, introducing it three or four inches into the soil, turning up the earth with care not to wound the crown of the roots. Then make the surface of the beds even and equal, drawing off the rough earth, stones, etc., into the alleys; finish by stretching a line along the edge of the beds, and trim them neatly off with the spade. Stirring the bed in this manner enables the shoots to rise in free growth; admits the air, rain and sunshine into the ground, and encourages the roots to produce buds of a strong size. A full crop may be expected the fourth season after planting. The proper method

of cutting them is to scrape a little of the earth away from each shoot; then, with a sharp-pointed, long-bladed knife, cut off the shoot slantingly, about three inches under the surface, taking care not to wound the younger buds that are advancing below in different stages of growth. It is in the best state for cutting when it is four inches above ground, and while the top remains close and round. The cutting should never extend beyond the middle of June.

**BEANS—Kidney-Dwarfs.**—The following are good varieties: early Denmark, early Mohawk, early valentine, early yellow six-weeks, early dun-colored, or quaker, early China dwarf, early Rachel, or quail's head, early Rob-Roy, early Black Dwarf, large white kidney dwarf, white cranberry dwarf, red cranberry dwarf, yellow cranberry dwarf, refugee, or thousand to one, marble Swiss bean, royal dwarf kidney, or French.

**English Dwarfs.**—Varieties: early Mazagan, early Lisbon, early long-pod, large Windsor, large token, broad Spanish, Sandwich bean, green Genoa, dwarf cluster, white blossom, green nonpareil, sword long-pod.

**Pole or Running.**—Varieties: large white Lima, speckled Lima, scarlet runners, white Dutch runners, Dutch case-knife, or princess, London horticultural, French bicolor, red cranberry, white cranberry.

The soil and culture of the different varieties of the bean are essentially the same, except that pole-beans require a greater distance in the hills, and the Limas especially a deeper and richer soil. A soil inclining to clay suits them best, and it should be made rich, notwithstanding the popular error to the contrary.

Beans are often planted too early. They will always grow quicker, and yield better, if the planting be delayed until settled warm weather. The early Mohawk is the hardiest, and may sometimes succeed well, if planted about the middle of April; but it is much safer to delay the planting of any quantity until toward the end of the month.

Beans should not be cultivated when wet with rain or dew, as it causes them to rust. Beans are the most nutritious of vegetables, yielding eighty per cent. of nutritive matter, while wheat yields but seventy-four.

**Beet.**—Varieties: early blood turnip-rooted, early long blood, extra dark blood, yellow turnip-rooted, early scarcity, mangel-wurzel, French sugar, or Silesia, Sir John Sinclair's.

This vegetable should be sown in the fall (see *Fall Planting*;) but if not, as soon as the soil is in condition in the spring—the rows a foot apart, and the plants eight inches apart in the rows. In order to hasten the seed up in the spring (if sown then,) soak it four days and nights in rain-water before you sow it. Put it two inches deep, cover it well, and press the earth hard down upon it. Sow the seed pretty thick all along the drill; and, when the plants come up, thin them to eight inches apart. Hoe between the plants frequently; but not very deep, because these tap-rooted things are apt to fork if the ground be made loose very low down while they are growing. There are yellow and white beets, as well as red; but the red is the true kind: the others are degenerate. There is, however, round or turnip-rooted, red beet, which is equally good with the tap-rooted red beet. The ground should be rich, but not fresh dunged. Ashes of wood, or compost mould, is best;

and the digging ought to be very deep, and all the clods ought to be broken into fine earth; because the clods turn the point of the root aside, and make the tap short, or forked. Fresh dung, which, of course, lies in unequal quantities in the ground, invites the tap-root, or some of the side roots to it, and thus causes a short or forked beet, which, for several reasons, is not as good as a long and smooth one. It is always best to thin beets while young. If the tops are used as a vegetable, it should be early, as otherwise they injure those which are to stand, beyond recovery.

**Borecole, or Kale.**—Borecole, German greens, or Scotch kale, is a very delicate vegetable. It is essential to its perfection that it be fully acted upon by frost before it is cut for the kitchen. There are several varieties of it. The parts used are the top or crown of the plant, with any of the side sprouts. It boils well, and is tender and sweet. The tall and dwarf curly sorts are best adapted for garden culture. Sow the seed in April, along with other cabbage, which transplant and treat in the same manner.

**Broccoli.**—Varieties: early white, early dwarf purple, early green, dwarf brown, large late purple, large purple cape, white cape, or cauliflower, sulphur-colored cape, branching purple, and large late green.

The several varieties of broccoli and cauliflower may be justly ranked among the greatest luxuries of the garden. They need only be known in order to be esteemed.

The proper time for sowing the seed of purple-cape broccoli is from the tenth to the twenty-fourth of May. Their subsequent cultivation is the same as cabbage.

It has been proved, by repeated experiments, that the purple-cape broccoli succeeds better in our climate than any other variety; and also that, if broccoli or cauliflower-plants be retarded in growth by extreme heat, they seldom arrive at full perfection. It is, therefore, important that the time of sowing the seed of cape broccoli be so regulated as to allow say six weeks of the summer for the plants to grow in, previous to their being transplanted, and about seven or eight weeks between that and the commencement of cool autumn weather, which is essential to mature them.

In this, and more northern latitudes, it is necessary to put these plants into a shed or cellar, to have them during winter. Lift them carefully before severe frost, and plant them in earth. They will head well when thus treated; but south of Virginia this vegetable may be had in perfection without the least trouble excepting the culture. The seed is all imported from Europe.

**Cauliflower.**—Varieties: early white, late white, hardy red, or purple cauliflower.

Sow at the same time and in the same manner as you sow early cabbages. Treat the plants in the same way; put them at two feet and a half distance; you need not now water them; they will begin to come early in October; and if any of them have not perfected their heads when the sharp frosts come, take them up by the root, hang them up by the heels in a warm part of a barn, or in a cellar; they will get tolerably good heads, and you will have some of those heads to eat at

Christmas. The seed, on account of the heat, is extremely difficult to save in America; but if a fall cauliflower were kept in a green-house during winter, and put out three weeks before corn-planting time, I am persuaded it would bring good seed in June. The quantity of this plant must depend upon the taste for it; but it is so much better than the very best of cabbages, that it is worth some trouble to get it.

**Cabbage.**—Varieties: early imperial, early dwarf Dutch, early York, early sugar-loaf, early emperor, early Wellington, early heart-shaped, early London market, early London Battersea, large Bergen, or American, late flat German, large green glazed, large late drum-head, red Dutch for pickling, green globe Savoy, large cape Savoy, green curled Savoy, turnip-rooted, in varieties.

The early sorts of cabbages may be forwarded in various ways, either by planting in the fall (see *Fall Planting*) or in a cold frame. But early plants are now more generally raised in hot-beds. They may be transplanted as early as the ground can be worked in the spring, and if hoed often—the oftener the better—will produce cabbage the last of June.

If seed of the large early kinds be sown in a warm border early in April, they will produce plants fit to transplant in May, which will make good cabbages for summer use.

The seed of red cabbage may be sown toward the end of April or early in May, and that of Savoys, and late cabbage in general may be sown at two or three different times, between the middle and the end of May, in fresh, rich ground.

The most certain way of raising good strong plants in the summer season is to sow the seed in a moderately shaded border, in shallow drills drawn three or four inches apart.

To have fine cabbages, of any sort, the plants must be twice transplanted. First they should be taken from the seed-bed (where they have been sown in drills near to each other), and put out into fresh-dug, well-broken ground, at six inches apart every way. This is called pricking out. By standing here about fifteen or twenty days, they get straight and strong, stand erect, and have a straight and stout stem. Out of this plantation they come nearly all of a size; the roots of all are in the same state; and they strike quicker into the ground where they are to stand for a crop. All the larger sorts of cabbages should, about the time that their heads are beginning to form, be earthed up; that is, have the earth from the surface drawn up against the stem; and the taller the plants are the more necessary this is, and the higher should the earth be drawn. After the earth has been thus drawn up from the surface, dig, or hoe deep the rest of the ground. Thus the crop will be brought to perfection.

The best sorts of early cabbage are early York, large York, late York, early nonpareil, early Varick. Of late the early Dutch is the best table variety, while the late Dutch, Bergen, and Savoy are later and larger, though less esteemed varieties.

**Celery.**—The qualities of this plant are universally known. There are three or four sorts; the white, the red, the hollow, and the solid. The hollow white is the best; but the propagation and cultivation of

all are the same. The whole of that part of the year during which the frost is out of the ground, is not a bit too long for the getting of fine celery. The seed sown in the cold ground in April will lie six weeks before it comes up. A wheel-barrow full of hot dung, put in a hole in the ground against a wall, or any fence, facing the south, and covered with rich and fine mould, will bring the seed up in two weeks. If you have a hot-bed frame, or a hand-light, the thing is easy. A large flower-pot will bring up out of ground plants enough for any family. As soon as the plants are three inches high, and it scarcely matters how thick they stand, make a nice little bed in open, free air; make the ground rich and the earth very fine. Here prick out the plants at four inches apart; and, of course, nine in a square foot. They are so very small that this must be carefully done; and they should be gently watered once, and shaded two days. A bed ten feet long and four wide will contain 360 plants; and if they be well cultivated they are more than any common-sized family can want from November till May. In this bed the plants stand till the middle of July, or thereabouts, when they are to go out into trenches. Make the trenches a foot deep and a foot wide, and four feet apart. The bottom, to the depth of four inches, should be made rich by finely rotted manure, and the plants set six to eight inches apart in the row. Water them freely, and shade them for a few days. The soil should be frequently stirred with a small hoe. About the middle of August the earth should be drawn up carefully about the plants, but not to cover their centers. About the first of October the earthing may be done more frequently, say once in two weeks. When two feet high, they are fit for the table. When continued frost is expected, the plants should be covered with dry litter, and a supply for use laid in a bed of sand or earth in the vegetable cellar, where they will keep fresh for several weeks.

**Cress** is a small salad herb, and is generally used with lettuce, white mustard, rape, chervil, etc. It may be sown very thick in little drills, as should salad seed in general, and cut before it comes into rough leaf. A small quantity in the salad season, which is spring and autumn, may be sown every week in rich ground, free from weeds.

**Cucumber.**—Cucumbers, melons, etc., are often planted too thick. One plant in a hill is all that should be allowed to mature. One plant will bring more than two, two more than three, and so on, until you have no fruit. The roots of a cucumber, in fine earth, will go ten feet! Let this fact be understood by all our young readers, and we shall soon see finer bearing vines than we have had heretofore. If you wish to have them a month earlier than the natural ground will bring them, do this: make a hole, and put into it a little hot dung; let the hole be under a warm fence; put six inches deep of fine rich earth on the dung; sow a parcel of seeds in this earth; and cover at night with a bit of carpet, or sail-cloth, having first fixed some hoops over this little bed. Before the plants show the rough leaf, plant two into a little flower-pot, and fill as many pots in this way as you please. Have a larger bed ready to put the pots into, and covered with earth so that the pots may be plunged in the earth up to their tops. Cover this bed like the last. When the plants have got two rough leaves out, they will begin to make a shoot in

the middle. Pinch that short off. Let them stand in this bed till your cucumbers sown in the natural ground come up; then make some little holes in good rich land, and, taking a pot at a time, turn out the ball, and fix it in the hole. These plants will bear a month sooner than those sown in the natural ground.

**Carrot.**—For the cultivation of the carrot, see article *Carrot* in *The Farm*.

**Corn.**—Early corn is so delicious a vegetable that it should by all means have a place in every good kitchen-garden. Its cultivation is, however, so easy and so well understood, that special directions for it need not here be given.

**Egg-Plant.**—Sow in April, on a warm border where they are to remain; or transplant in June during moist weather. Plant in rows two feet apart, and two feet from plant to plant. The seed will keep three or four years. Sow valentine-beans between the rows.

Select the fruit when at maturity; cut it into slices, and parboil it in a stew-pan; when softened, drain off the water; it may then be fried in batter made with wheaten flour and an egg, or in fresh butter, with bread grated fine and seasoned before it is put in the pan, with pepper, salt, thyme, and such other herbs as may best suit the palate. Some use marjoram, summer savory, parsley, onion, etc.

**Endive.**—Sow the seed in April, in drills half an inch deep, and about eighteen inches apart; thin out the plants to six or eight inches in the row. The plant produces beautiful blue flowers, and is worthy of a place in the flower-garden. The roots, when dried, roasted as coffee, and ground, may be mixed in the proportion of two ounces of the powder to a pound of coffee.

**Lettuce.**—Varieties: large green-head, Dutch, or cabbage, tennis-ball, or rose, Madeira, or passion, large green curled, loco-foco—these are hardy kinds: early Silesia, imperial, or sugar-loaf, pale-green, or butter, grand admiral, large summer Silesia, and Paris loaf-coss.

The first six of the above varieties have been tested, and are known to stand our winter. They may be sown from the first to the middle of September; covered with straw as the cold weather sets in, and, transplanted into a warm border as early as possible in the spring, will produce fine heads early in June.

All kinds of lettuce intended for heading should be planted in good ground, twelve inches distant from each other every way; the plants should be carefully hoed every other week during their growth; the first hoeing should be done in about two weeks after they are transplanted.

The coss-lettuce requires to be blanched; this is done by gathering up the leaves of the plants and tying bass round them, when grown to perfection.

**Melon.**—Varieties: green-fleshed citron, Murray's pine-apple, green-fleshed Persian, green-fleshed nutmeg, large yellow cantaloupe, pomegranate, or musk-scented, Skillman's fine netted, snake (curious).

For the varieties of the musk or cantaloupe melons, prepare a piece of rich ground early in May; manure it and give it a good digging; then mark it out into squares of six feet every way; at the angle of each square, dig a hole twelve inches deep and eighteen over, into which put

about six inches deep of old rotten dung; throw thereon about four inches of earth, and mix the dung and earth well with the spade; after which draw more earth over the mixture, so as to form a circular hill about a foot broad at top. When your hills are all prepared, plant in each, toward the center, eight or ten seeds, half an inch deep and a few inches apart. As soon as the plants have made two rough leaves, thin them out, leaving only four to each hill. When each has made four or five rough leaves, pinch the point of each shoot to make the plants branch out and fruit earlier. It also strengthens the vines. Earth up the vines thin, and keep free of weeds. Cotton-batting laid loosely over the young plants, the edges covered with earth, is the best known protection from the striped bug. It also protects them from frosts and cold winds.

**Water-Melons.**—The culture is the same as the musk-melon, except that they require planting at greater distances. You should leave but one plant in a hill, and should till the ground between the plants while they are growing, until it be covered by the vines. If the plants stand too close, the vines will be weak, and fruit small, thick-rinded, and poor as to flavor.

**Okra.**—The green capsules of this plant are used in soup, stews, etc., to which they impart a rich flavor, and are considered nutritious. Its ripe seed, if burned and ground like coffee, can scarcely be distinguished therefrom.

This seed should be planted in good, rich ground, the first or second week in May, if settled warm weather, but not otherwise, as it is a very tender vegetable. Draw drills about an inch deep, and three or four feet asunder, into which drop the seed at the distance of six or eight inches from each other, or rather drop two or three in each place, lest the one should not grow, and cover them nearly an inch deep. As the plants advance in growth, thin them out, earth them up two or three times, and they will produce abundantly.

**Onion.**—Varieties: New England white, large red, yellow or silver-skinned, yellow Dutch, Strasburgh or Flanders, Madeira, potato.

Of the several varieties of onions, the yellow, or silver-skinned, and large red, are the best for a general crop. The bulbs are handsome, of a firm growth, and keep well through the winter. The New England white are handsome for the table, and very suitable for pickling, as well as to pull while young, and generally prove a very profitable crop.

The soil cannot be too rich for this vegetable, nor can it well be planted too early in the spring. Indeed, fall planting (see article *Fall Planting*) is generally best. When grown from seed, they should be often lightly hoed, never earthed up, and evenly thinned to eight inches in the row. Yet the best method is the following: sow the onions any time between April and the middle of June, in drills six inches apart, and put the seed very thick along the drills. Let all the plants stand, and they will get to be about as big round as the top of your little finger. Then the leaves will get yellow, and when that is the case, pull up the onions and lay them on a board till the sun has withered up the leaves. Then take these diminutive onions, put them in a bag, and hang them up in a dry place till spring. As soon as the frost is gone, and the ground dry, plant out these onions in good and fine ground, in rows of a

foot apart. Make, not drills, but little marks along the ground, and put the onions at six or eight inches apart. Do not cover them with the earth, but just press them down upon the mark with your thumb and fore-finger. The ground ought to be trodden and slightly raked again before you make the marks; for no earth should rise up about the plants. Proceed after this as with sown onions; only observe that, if any should be running up to seed, you must twist down the neck as soon as you perceive it.

**Parsley.**—The best way is to sow it in spring, and in very clean ground; because the seed lies long in the ground, and, if the ground be foul, the weeds choke the plants at their coming up. A bed of six feet long and four wide, the seed sown in drills at eight inches apart, is enough for any family in the world. But, every body likes parsley, and where the winter is so long and so sharp as it is in this country, the main thing is to keep it through the winter. This may be done by covering the bed six inches thick with long litter *after the ground is frozen*, which must remain until spring; or if some of the roots be taken up early in November and put in a frame or light cellar, the leaves will keep green a long time.

**Parsnip.**—See *Parsnip* in *The Farm*.

**Peppers.**—Varieties: grossum, or bell pepper, tomato-shaped, or squash, long red, or bird's bill, cherry, or West Indian, sweet Spanish; used as a salad, has a very delicate taste.

Sow seed in the open ground in May, in drills two feet asunder, and half an inch deep. When the plants are grown an inch or two high, thin them to the distance of fifteen or eighteen inches in the rows. The ground should be afterward hoed deep round the plants, and kept free from weeds by repeated hoeings.

**Pea.**—See article *Pea* in *The Farm*.

**Radish.**—Varieties: early scarlet short top; root long and spindle-shaped, leaves very short. It is the earliest, most crisp and mild flavored, and requires less space than the other varieties; salmon: a few days later; not so high colored; otherwise similar to the above; red turnip: named from its shape, and bears the heat better, without becoming hard, but not so good as the above; white turnip: like the last, in every thing except color; yellow summer: this is a turnip-rooted variety, named from its color, and will stand the heat better than any other variety; black winter or Spanish: turnip-shaped, and very large; sown in August or September with turnips. It can be gathered from the ground as desired during the winter.

Those who may be desirous of having good radishes early in the spring, should have a warm border prepared in the very best manner, so as to be ready to sow some of the short top scarlet by the middle of March. If the ground should not be in good condition to receive the seed at this time, let it be delayed a few days; and by the first of April, have another bed prepared in the open ground, by digging in some good strong manure. The seed may be sown broadcast, and raked in evenly, or in drills drawn about one inch deep, and a foot apart.

**Rhubarb.**—Varieties: Myatt's Victoria, Myatt's Linnæus, (Italian,)

Buist's early red and Downing's colossal are the best. *Palmatum* is the variety the root of which is so extensively used in medicine. It may be grown here as well as in Scotland, India and China. This plant requires a light, deep and rich soil. There is no obstacle to the cultivation of this interesting plant. It will stand unprotected as far north as the St. Lawrence, and yield annually a large crop. North of that limit all that is necessary for its preservation is to throw over it, during winter, a quantity of dry leaves, to keep off intense frost, and, as spring opens, to clear away the litter and cultivate the ground. If there are three months of good sun, it is all the plant requires to mature it. Wherever oats will grow, the rhubarb will thrive; only give it depth of soil for its roots, and manure to stimulate its luxuriance. In southern latitudes it must be planted in moist situations, and under the shade of buildings, to ward off the scorching rays of the sun at mid-day, and in dry periods it must be watered freely. The whole of this continent, from the Gulf of Mexico to Hudson's Bay, may enjoy the luxury of this vegetable.

It may be forwarded by placing an inverted barrel or tub over it, before the ground freezes in autumn, covering with heavy litter, or by covering the plant itself from six to twelve inches with the same material.

**Salsify**, called by some oyster-plant, is good in soups, or to eat like the parsnip. It is cultivated like the parsnip, and like it, stands out the whole of an American winter.

**Squash**.—Varieties: early bush scollop, green striped bush, early crookneck, large cushaw, vegetable marrow, winter crookneck, Lima cocoa-nut, acorn, or California.

Cultivated precisely like the melon and cucumber, which see.

**Spinach**.—Every one knows how good and useful a plant this is. It is certainly preferable to any of the cabbage kind in point of wholesomeness, and it is of very easy cultivation. There is, in fact, but one sort that I know any thing of, though the seed is sometimes more prickly than at other times. To have spinach very early in the spring, sow on or about the first week in September, in drills a foot apart, and when the plants are well up, thin them to six inches. They will be fine and strong by the time that the winter sets in; and as soon as that time comes, cover them over well with straw, and keep the straw on till the breaking up of the frost. Sow more as soon as the frost is out of the ground, and this will be in perfection in June. You may sow again in May, but the plants will go off to seed before they attain to much size. If you save seed yourself, save it from some of the plants that have stood the winter.

**Tomato**.—Varieties: large red, large yellow, pear-shaped, cherry-shaped.

The seed should be sown early in March, in a slight hot-bed, and the plants set out in the open ground, if settled warm weather, in the early part of May. In private gardens it will be necessary to plant them near a fence, and to provide trellises for them to be trained to; they will, however, do very well if planted four feet distant from each other every way.

Tomatoes may be brought to perfection late in the summer by sowing the seed in the open ground the first week in May; these plants will be fit to transplant early in June, and the fruit may ripen in time for preserves, or for catsup.

Tomatoes may be preserved in a stone or glazed earthen pot, for use in the winter, by covering them with water in which a sufficient quantity of salt has been dissolved to make it strong enough to bear an egg. Select perfectly ripe berries, and cover the pot with a plate in such a manner that it presses upon the fruit without bruising it. Previous to cooking these tomatoes, they should be soaked in fresh water for several hours.

They are also preserved in their fresh and natural state in fruit-cans—an excellent, and now quite common practice.

**Turnip.**—See *Turnip* in *The Farm*.

**Aromatic, Pot, and Sweet Herbs.**—Varieties: garden Angelica, anise, sweet basil, borage, garden burnet, caraway, chervil, or the sweet-cicely; clary, coriander, dill, common fennel,\* sweet fennel,\* pot marigold, sweet-marjoram,\* spearmint,\* peppermint,\* pennyroyal-mint,\* common sage,\* red sage,\* summer savory, winter savory,\* tarragon,\* common thyme,\* lemon thyme.\*

Aromatic herbs are such as impart a strong spicy odor and savory taste; many of them are used as small pot herbs, and for sauces, stuffings, and other uses in cooking. As only a small quantity of these are necessary in private gardens, a by-corner may be allotted for them and such medicinal herbs as may be wanted in a family.

It may be necessary to explain, as we go along, that there are three principal descriptive names given to plants, namely, annuals, biennials, and perennials. The annuals being but of one season's duration, are raised every year from seed. The biennials are raised from seed one year, continue till the second, then perfect their seed, and soon after die; some of these should also be raised every year from seed. The perennials may be raised from seed, but when once raised, they will continue on the same roots many years. Those marked \* are of the latter description, and may be propagated by suckers, off-sets, cuttings, or parting the roots. Those who have not already a plantation of these herbs may sow the seed of any of the different kinds in April or May, in drills about half an inch deep and twelve inches apart, each kind by itself. The plants may afterward be transplanted into separate beds; or if a drill for each kind be drawn two feet apart, the seed may be sown in them, and the plants afterward thinned out to proper distances, according to the natural growth of the different kinds of plants.

**Plants Cultivated for Medicinal and Other Purposes.**—Bene, boneset, or thoroughwort; balm,\* castor-oil bean, burdock, catnep, celandine, chamomile,\* comfrey,\* elecampane,\* feverfew, horehound,\* horsemint,\* hyssop,\* lavender,\* lovage, marsh-mallow,\* motherwort,\* patience-dock,\* Carolina pinkroot,\* opium poppy (annual), rosemary,\* garden rue,\* bastard saffron, skull-cap, or mad-dog plant; Virginian snake-root, sorrel,\* southernwood,\* Virginian speedwell,\* spikenard,\* tansy,\* wormwood.\*

The generality of aromatic, sweet, and medicinal herbs may be raised

om seed sown in April and May. The greater part of the above-mentioned plants are perennial, and will multiply from the seed they drop, or from partings from the roots. The off-sets, roots, or young plants thus raised, should be planted at suitable distances from each other early in the spring.

The beds should afterward be kept free from weeds, and as the herbs come into flower, they should be cut on a dry day, and spread in a shady place to dry for winter use. The best way to preserve them after they are dried is to rub them so as to pass them through a sieve, then pack them in bottles or boxes, each kind by itself; they should be afterward kept in a dry place.

In the month of October the herb-beds should be examined. Lavender, rosemary, and other tender plants should be taken up, potted, and placed in a frame or green-house for the winter. Thyme, hyssop, winter savory, southernwood, sage, rue, and the like, will require their tops to be neatly dressed; and pot marjoram, burnet, tarragon, tansy, pennyroyal, sorrel, chamomile, fennel, horehound, mint, lovage, and other kinds of hardy perennial herbs, should be cut down close to the ground.

After this is done, it will be proper to dig lightly, and loosen the ground between the roots of the shrubby plants; but the beds of close-growing running plants, such as mint, running thyme, and all other creeping herbs, will not well admit of digging; therefore, after the stalks are cut down, and the beds cleared of weeds, dig the alleys, and strew some of the loose earth evenly over the beds; and if the ground be rather poor or light, a top dressing of very rotten dung will be of considerable service.

**THE FRUITS TO CULTIVATE.**—The fruits appropriate to the garden are:

The blackberry, currant, gooseberry, grape, dwarf pear, raspberry, strawberry and quince. All these may, and should be cultivated in every garden, though it contain no more than one eighth of an acre. The expense and labor are comparatively trifling, and the comfort, health and often profit, which their proper cultivation affords are by no means inconsiderable.

**The Blackberry.**—This is one of the easiest cultivated, the hardiest, most productive, the most acceptable, and we may also add, the most neglected of our berried fruits. The native plantations, once so plentiful in their supply, have largely yielded to the cultivation of fine crops, and we must now either dispense with the use of this excellent fruit, or resort to its artificial cultivation. As it can so easily be done, either by transferring



THE LAWTON.

to the garden, or to some inclosed portion of the building grounds the native sorts which do well, or some of the finer cultivated varieties, it will not, it is believed, be much longer neglected.

The following are good varieties: New Rochelle or Lawton—very large, intensely black, juicy, rather soft, sweet, excellent flavor; ripens the first of August, and continues in use six weeks; originated at New Rochelle, N. Y. Dorchester—nearly equal in size to the foregoing, but of a more elongated form; very sweet and high-flavored; vigorous and productive; ripens about the first of August; bears carriage well; originated in Massachusetts. Newman's thornless—promises to be valuable; not so well tested as the others. New York.

*Cultivation.*—The suckers of this year are planted out in rows, six feet apart, and the plants two feet apart in the rows. This is done in the fall, or early in the spring. At the time of planting they should be cut down to within a foot of the ground. They will bear a little, and they will send out several suckers which will bear the next year. About four is enough to leave, and those of the strongest. These should be cut off in the fall, or early in spring, to within four feet of the ground, and should be tied to a small stake. A straight branch of locust is best, and then the stake lasts a lifetime at least, let the life be as long as it may. The next year more suckers come up, which are treated in the same way.

Swamp muck, chip-dirt, leaf-mould, and a light dressing of salt are good applications. The best soil is a deep, rich, moist loam.

*Currant.*—The currant is propagated by cuttings, which should be planted in the fall in a shady situation. It requires moist, rich, deep loam, and should be trained as a bush. It bears on wood of previous year's growth; but mostly on two-years-old wood. As soon as the fruit is off, thin out the old wood, leaving only stems of the present and last year's growth. Clip off three or four inches of the former to make a growth of spurs for the next crop.

Varieties: cherry currant—the best variety, very large, nearly twice the size of the common red Dutch; round, light red, clusters moderately short, quite acid; growth large, tall, and luxuriant. Red Dutch—fruit of large size, oblate, borne in large clusters, and less acid than the common red; color fine transparent red. White Dutch—large yellowish white, less acid than the red kinds. Black Naples—is the largest and best of the black varieties; but none of these are desirable.

*Gooseberry.*—Varieties: crown bob, roaring lion, white Smith, red Warrington, Wellington's glory, Houghton's seedling. Crown bob—large, often an inch and a fourth long, roundish oval, red, hairy; flavor of first quality; branches spreading or drooping. Roaring-lion—very large, oblong oval, red smooth; flavor fine, hangs long, branches drooping. Houghton's seedling—fruit small, oval, commonly about three-fourths of an inch long; skin smooth, thin, glossy, a pale, dull reddish brown, marked with faint greenish lines; flesh tender, juicy, sweet, pleasant; ripens soon after midsummer. Not high-flavored, as compared with the best European sorts, but a profuse bearer, always free of mildew, and of very easy cultivation. A seedling from a wild American species; origin, Salem, Mass.

The gooseberry is propagated precisely like the currant. Manuring,



MOUGHTON'S SEEDLING.

high cultivation, and pruning, will, in some cases, prove sufficient to prevent mildew. This may be assisted by the cautious application of salt, either thinly over the soil, or directly upon the plant; in the latter case, the solution should be so thin that the saline taste may be just perceptible. But shading by a thick coat of salt hay appears to be the most efficient remedy. It should be spread in a layer of several inches, or even a foot in thickness, crowding it down to make room for the branches. This should be done in spring. It has

proved quite successful in a multitude of instances, even as far south as Delaware. In inland districts, where sea-weed or salt hay cannot be had, a convenient substitute consists in placing coarse hay or straw beneath the bushes, and then applying a solution of salt with a watering-pot, avoiding direct contact with the bushes, if the solution be strong.\*

**The Grape.**—This delicious fruit is too much neglected. There are fine and hardy varieties as easily cultivated as the currant, and, when once established, will last an age—yielding annually an abundance of the most wholesome, palatable, and marketable fruit. The care required is very trifling, when compared with the rich returns they give.

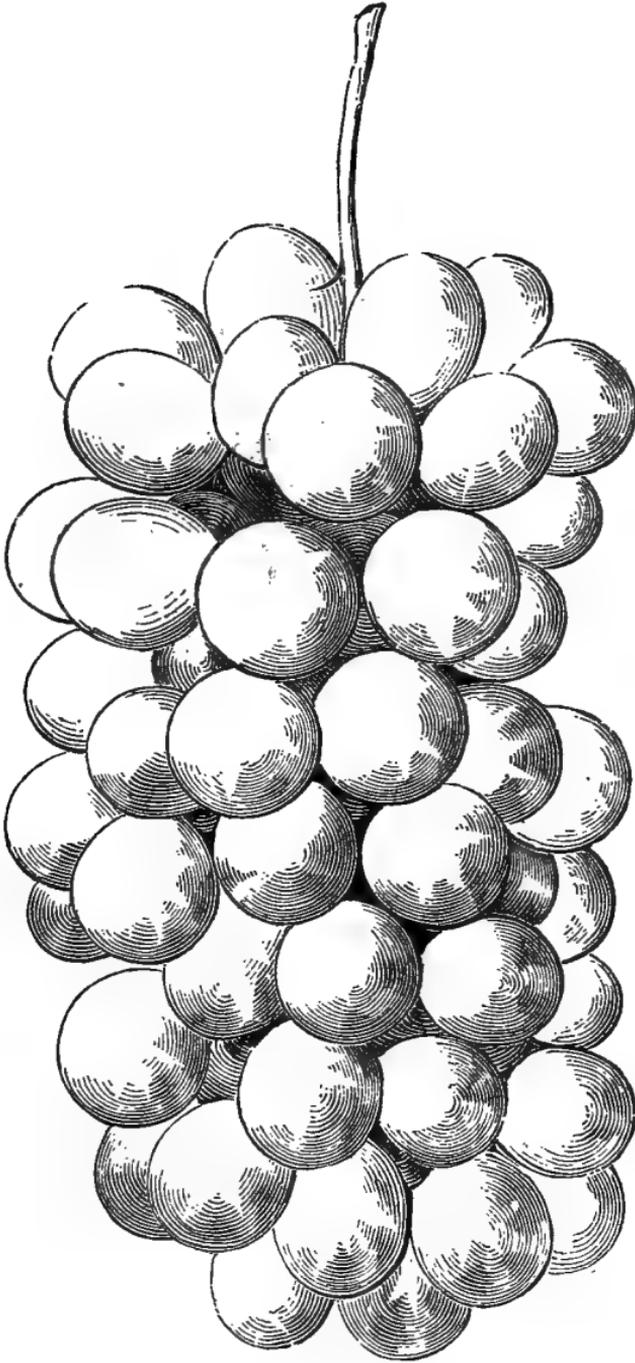
The varieties of both native and foreign grapes are very great. The following choice and hardy varieties may be grown as far north as 43°:

*Catawba.*—Bunches medium in size, shouldered; berries large, pale-red, deeper in the sun, with a thin lilac bloom; flesh slightly pulpy; juicy, sweet, aromatic, rich, slightly musky. Does not ripen well as far north as latitude 43°, except in warm exposures. Very productive.

*Isabella.*—Bunches rather large, shouldered; berries round-oval, rather large; skin thick, dark purple becoming nearly black, bloom blue; tender, with some pulp which lessens as it ripens; when fully ripe, juicy, sweet, rich, slightly musky. Ripens as far north as forty-three degrees latitude, except in unfavorable seasons. Very vigorous, and profusely productive. Origin, South Carolina.

*Diana.*—A seedling from the *Catawba*, which it resembles, but paler, or a pale grayish-red; bunches loose, berry round, almost without pulp; juicy, sweet, rich. It ripens earlier than the *Isabella*. Origin, Milton, Massachusetts.

\* Thomas.



REBECCA GRAPE.\*

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\* For many of the illustrations of this work, we are under obligation to the *American Agriculturist*, published by Orange Judd, New York, a monthly journal

*Elsinburgh.*—Bunches rather large, loose, shouldered; berries quite small, skin thin, black; bloom blue; pulp, none; melting sweet, excellent. Leaves, deeply five-lobed, dark green; wood slender, joints long. Hardy. New Jersey.

*Propagation and Training.*—The following on this subject, from Cobbett's "American Gardener," is one of the most concise and clear expositions of an easy and practicable mode of culture and training that we have seen. Graperies and arbors, by this mode, are rendered unnecessary; the vines may be planted along the north border of the garden, the south side of a building, or in any convenient place, in a single line; the vines and fruit are at all times within convenient reach for pruning or training the one, or thinning or plucking the other.

The grape-vine is raised from cuttings or from layers. As to the first—you cut off, as early as the ground is open in the spring, a piece of the last year's wood; that is to say, a piece of the wood which grew the last season. This cutting should have an inch or two of the old wood, but it is not absolutely necessary. The cutting should have four or five buds or joints. Make the ground rich, move it deep, and make it fine. Then put in the cutting with a setting-stick, leaving only two buds or joints above-ground. Layers from the grape-vine are obtained very easily. You have only to lay a shoot or limb, however young or old, upon the ground, and cover any part of it with earth; it will strike out roots the first summer, and will become a vine to be carried and planted in any other place. The cut represents the trellis-works for vines. These are to be five feet high, and are to consist of rows of posts put firmly into the ground.

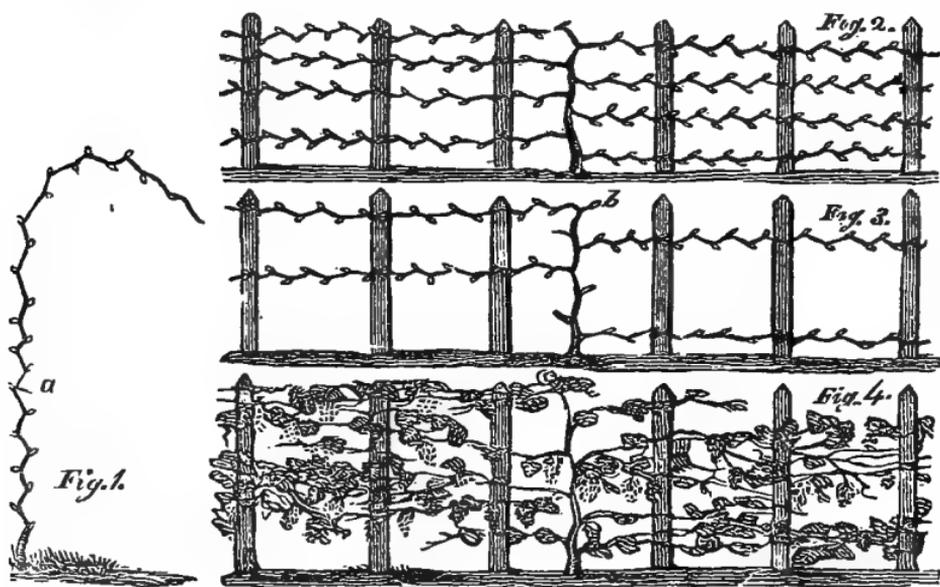
Allow to each vine an extent of sixteen feet, and something more for overrunning branches.

Look now at the cut, which exhibits, in all its dimensions, the cutting become a plant, Fig. 1. The first year of its being a vine after the leaves are off, and before pruning, Fig. 2. The same year's vine, pruned in winter, Fig. 3. The vine in the next summer, with shoots, leaves and grapes, Fig. 4. Having measured your distances, put in a cutting at each place where there is to be a vine. You are to leave two joints or buds out of the ground. From these will come two shoots perhaps; and if two come, rub off the top one and leave the bottom one, and in winter cut off the bit of dead wood which will, in this case, stand above the bottom shoot. Choose, however, the upper one to remain, if the lower one be very weak. Or, a better way is, to put in two or three cuttings within an inch or two of each other, leaving only one bud to each out of the ground, and taking away in the fall the cuttings that send up the weakest shoots. The object is to get one good shoot coming out as near to the ground as possible. This shoot you tie to an upright stick, letting it grow its full length. When winter comes, cut this shoot down to the bud nearest to the ground. The next year another and a

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devoted to agriculture and horticulture, a work, by the way, which we have found to be among the most accurate and reliable in the country, conducted by a gentleman of indomitable perseverance, who is wide-awake to the great interests he advocates, and whose journal should be in the hands of all who cultivate even a garden.

much stronger shoot will come out; and, when the leaves are off in the fall, this shoot will be eight or ten feet long, having been tied to a stake as it rose, and will present what is described in Fig. 1. You must



make your trellis, that is, put in your upright locust bars to tie the next summer's shoots to.

Four wires should run along the face of these posts, one the first one foot and a half from the ground; the others one foot apart. They may be fastened to the posts, which may be sixteen feet apart, by staples or large nails. These wires furnish admirable supports for the side-spurs, and are very quickly and cheaply applied. You will want eight shoots to come out to run horizontally, to be tied to these bars. You must now then, in winter, cut off your vines, leaving eight buds or joints, as at *a* fig. 1. During summer eight shoots will come, and, as they proceed on, they must be tied with matting, or something soft, to the bars. The whole vine, both ways included, is supposed to go sixteen feet; but if your tillage be good, it will go much further, and then the ends must be cut off in winter. Now, then, winter presents you your vine, as in fig. 2; you must prune, which is the all-important part of the business. Observe and bear in mind, that little or no fruit ever comes on a grapevine, except on young shoots that come out of wood of the last year. All the four last years' shoots that you find would send out bearers, but if you suffer that, you will have a great parcel of small wood, and little or no fruit next year. Therefore, cut off four of the last year's shoots, as may be seen at *b*, fig. 3, leaving only one bud. The four other shoots will send out a shoot from every one of their buds, and if the vine be strong, there will be two bunches of grapes on each of these young shoots; and as the last year's shoots are supposed to be each eight feet long, and as there generally is a bud at or about every half foot, every last year's shoot will produce thirty-two bunches of grapes;

every vine one hundred and twenty-eight bunches and the eight vines, five hundred and twelve; and, possibly, nay, probably, so many pounds of grapes! Is this incredible? Take then, this well-known fact, that there is a grape-vine, a single vine, with only one stem, in the Queen of England's gardens at her palace of Hampton Court, which has, for perhaps half a century, produced on an average, annually, a ton of grapes; that is to say, 2,240 pounds avoirdupois weight. That vine covers a space of about forty feet in length and twenty in breadth. And your two trellises being together one hundred and twenty-eight feet long and four deep, would form a space of more than half the dimensions of the vine of Hampton Court. However, suppose you have only a fifth part of what you might have, a hundred bunches of grapes are worth a great deal more than the annual trouble, which is, indeed, very little. Fig 4 shows a vine in summer. You see the four shoots bearing, and four other shoots coming on for the next year, from the butts left at the winter pruning, as at *b*. These four latter you are to tie to the bars as they advance on during the summer. When winter comes again, you are to cut off the four shoots that sent out the bearers during the summer, and leave the four that grew out of the butts. Cut the four old shoots that have borne, so as to leave but one bud at the butt. And they will then be sending out wood while the other four will be sending out fruit. And thus you go on, year after year, for your life; for, as to the vine, it will, if well treated, outlive you and your children to the third and even thirtieth generation. I think they say that the vine at Hampton Court was planted in the reign of King William. During the summer there are two things to be observed, as to pruning. Each of the last year's shoots has thirty-two buds, and, of course, it sends out thirty-two shoots with the grapes on them, for the grapes come out of the two first fair buds of these shoots. So that here would be an enormous quantity of wood, if it were all left to the end of summer. But this must not be. When the grapes get as big as peas, cut off the green shoots that bear them at two buds' distance from the fruit. This is necessary in order to clear the vine of confusion of branches, and also to keep the sap back for the supply of the fruit. These new shoots that have the bunches on, must be kept tied to the trellis, or else the wind would tear them off. The other thing is, to take care to keep nicely tied to the bars the shoots that are to send forth bearers the next year; and, if you observe any little side-shoots coming out of them, to crop these off as soon as they appear, leaving nothing but the clear, clean shoot. It may be remarked, that the butt, as at *b*, when it is cut off the next time, will be longer by a bud. That will be so, but by the third year the vine will be so strong, that you may safely cut the shoots back to within six inches of the main trunk, leaving the new shoots to come out of it where they will; taking care to let but one grow for the summer. If shoots start out of the main trunk irregularly, rub them off as soon as they appear, and never suffer your vine to have any more than its regular number of shoots. In cases where grapes are to be grown against houses, or to be trained over bowers, the principle is the same though the form may differ. If against the side of a house, the main stem of the vine might, by degrees, be made to go, I dare say, a hundred feet high. Suppose

forty feet. In that case it would be forty instead of four; but the side shoots, or alternate bearing limbs, would still come out in the same manner. The stem, or side limbs may, with the greatest ease, be made to accommodate themselves to windows, or to any interruptions of smoothness on the surface. If the side of the house or place be not very high, not more than fifteen or twenty feet, the best way is to plant the vine in the middle of your space, and, instead of training an upright stem, take the two lowest shoots and lead them along, one from each side of the plant, to become stems, to lie along within six inches or a foot of the ground. These will, of course, send out shoots, which you will train upright against the building, and which you will cut out alternately, as directed in the other case.

As to cultivation of the ground, the ground should not only be deeply dug in the fall, but with a fork two or three times during the summer. They plow between them in Languedoc, as we do between the Indian corn. The ground should be manured every fall, with good, rich manure. Blood of any kind is excellent for vines. But, in a word, the tillage and manuring cannot be too good.

Lime, potash, and phosphates are the mineral constituents mostly required. Potash—wood-ashes—freely applied, is thought to improve the quality of the wine produced.

The American Pomological Society recommends but the three following varieties of grapes for general cultivation, viz.: the Isabella, Catawba, and Diana. The Rebecca has also been found valuable, and worthy of general cultivation.

**Dwarf Pears.**—See *Fruit Garden* in a following part of this work.

**Raspberry.**—Varieties: red Antwerp, orange, American red, American black, Fastolf, Franconia, Ohio everbearing.

Its cultivation is simple. Give the plants rich, deep, sandy, loamy soil, and they will send up an abundance of suckers every season, each of which will form a plant and produce fruit the year following.

In the autumn cut out all the old wood that produced fruit the past summer, close to the ground; tie up the new shoots to a stake or trellis, about five feet high; then cut off about a foot of the tops of the shoots, and the work is done.

To have a fine crop of late raspberries, cut down some of the canes or stems, in the spring, to within a few inches of the ground. The new shoots which will spring up will come into bearing in August or September.

**The Strawberry.**—This early and delicious fruit receives less attention throughout the country than its importance demands; yet it is gratifying to find in this respect much improvement.

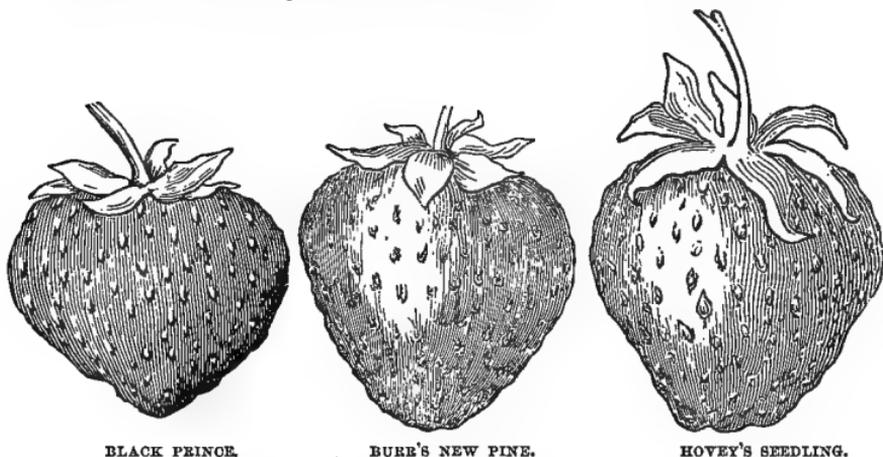
Varieties: large early scarlet, Black Prince, Burr's new pine, Western queen, Longworth's prolific, McAvoy's superior, Boston pine, Jenney's seedling, prolific hautboys, rival Hudson, Hovey's seedling.

Wilson's Albany is one of the most prolific of strawberries, bearing a great abundance of fruit. The Genesee is a favorite market variety, prolific and excellent. The Boston pine and rival Hudson are every way fine varieties, and worthy of general cultivation.

**Soil and Culture.**—A rich, deep loam, inclining to clay, is the best

soil, though sandy soils do well if made rich with a compost of animal manure—as bones, offal, etc., and decayed leaves, old mortar, and tanners' waste.

It often occurs that the staminates have become too numerous. These are easily detected, as they flower some four or five days earlier than the pistillates, and may then be drawn out.



BLACK PRINCE.

BURR'S NEW PINE.

HOVEY'S SEEDLING.

*To distinguish Staminates from Pistillates.*—In its natural state the strawberry produces perfect or hermaphrodite blossoms, but cultivation has wrought a change in this respect, and there are now three kinds represented and named as follows:

1st. Those in which the male or staminate organs are always perfect,



like *a*, in the figure; but the female or pistillate organs are so defective, that they will very rarely bear a perfect fruit. These are called staminate. 2d. Those in which the female or pistillate organs

are perfect (see *b*, in figure), but in which the male organs are generally so defective that they cannot produce fruit at all, unless in the neighborhood of, and fertilized by, staminate or hermaphrodite plants. Impregnated by these, they bear enormous crops. These are pistillate.

3d. (See figure *c*.) Those, like the native varieties, which are true hermaphrodites, that is, they are perfect in stamens, and more or less perfect in pistils, so that they generally produce a tolerable crop, and in favorable seasons, the pistils being fully developed, they will produce a good one. This is the staminate class of the books. The first of these classes, the staminate, rarely producing fruit, and running exuberantly to vine, should be dug up wherever they are found, since the hermaphrodite are productive, and equally useful for fertilizing. It is to the pistillate varieties, fertilized by the hermaphrodite, that we must look for large crops of fruit.\*

\* White.

*To Prolong the Fruiting Season.*—The fruiting season may also be controlled at pleasure by means of cutting foliage and flowers, and liberal or restrained watering. If, for instance, a bed of Jenney's seedling be taken, of eight feet square, the first two feet square shall be permitted to bloom and fruit at its usual time; the next two feet shall have only its first fruit-stems plucked when just about to bloom; the third shall have its entire foliage and fruit-stems cut close to the ground, and when the second fruit-stems appear, they are also to be picked as in the second plot; the fourth shall be treated as the third, but receive no moisture after the first cutting for a space of ten days or two weeks. The result will be a succession of fruit in order.

The following very easy mode of raising the strawberry, by a spontaneous renewal of the plants, or "culture in alternate strips," is thus described by A. J. Downing, and has been successfully practiced in various parts of the country:

"Early in April, or in August, being provided with a good stock of strong young plants, select a suitable piece of good deep soil. Dig in a heavy coat of stable manure, pulverizing well and raking the top soil. Strike out the rows, three feet apart, with a line. The plants should now be planted along each line about a foot apart in the row. They will soon send out runners, and these runners should be allowed to take possession of every alternate strip of three feet—the other strip being kept bare by continually destroying all runners upon it, the whole patch being kept free of all weeds. The occupied strip or bed of runners will now give a heavy crop of strawberries, and the open strip of three feet will serve as an alley from which to gather the fruit. After the crop is over, dig and prepare this alley or strip for the occupancy of the new runners for the next season's crop. The runners from the old strip will now speedily cover the new space allotted to them, and will perhaps require a partial thinning out to have them evenly distributed. As soon as this is the case, say about the middle of August, dig under the whole of the old plants with a light coat of manure. The surface may be then sown with turnips or spinach, which will come off before the next season of fruits.

"In this way the strips or beds occupied by the plants, are reversed every season, and the same plot of ground may thus be continued in a productive state for many years."

*The Quince.*—Varieties: apple-shaped or orange; pear-shaped—later than the former, and does not bear so well; Angers—said to be the best variety, though the orange is often preferred.

*Propagation, soil and culture.*—It is propagated from seeds, slips, layers or cuttings. The soil should be rich and deep, and kept free from grass and weeds. Liquid manure is a good application, as is also weak brine. They are greatly benefited by judicious pruning.

The bearing branches, or spurs of the quince, are small twiggy shoots, produced on wood at least two years old. These bear two, three, or more fruit-buds. These produce shoots two or three inches long, on the point of which the fruit is borne singly. These spurs have always wood-buds, as well as fruit-buds, and therefore should be short-

ened back the spring after they have borne, in order to produce new spurs at the same point.

**PROFITS OF GARDENING.**—Dr. Bigham, the late physician of the Utica Insane Asylum, gives the following, as the produce in a single season of one and one fourth acre of land connected with that institution. The land was good and annually manured. The produce was as follows: 1100 heads lettuce, large; 1400 heads cabbage, large; 700 bunches radishes; 250 bunches asparagus; 300 bunches rhubarb; 14 bushels pods marrowfat pease; 40 bushels beans; sweet corn, 3 plantings, 419 dozen; summer squash, 715 dozen; squash peppers, 45 dozen; cucumbers, 756 dozen; cucumber pickles, 7 barrels; beets, 147 bushels; carrots, 29 bushels; parsnips, 26 bushels; onions, 120 bushels; turnips, 80 bushels; early potatoes, 35 bushels; tomatoes, 40 bushels; winter squash, 7 wagon loads; celery, 500 heads—all worth 621 dollars in Utica market, but supplied one hundred and thirty persons with all they could consume. Only one man was required to do all the necessary labor.

**GARDEN IRRIGATION.**—The extraordinary increase of produce which may be obtained by the practice about to be explained here, ought to excite many who have favorable opportunities for so doing, to prepare a plot of ground on the same plan.

The admirable economy of the Chinese in their management of manure, and the nearly equal thriftiness of the Belgians in the same respect, are much surpassed by the method which may be seen at Caversham, in a small garden within a few yards of the lower Reading railway station.

**Mr. Wilkins's Model Garden at Caversham, Berks, England.**—The system has been pursued there by Mr. Wilkins during some years with perfect success. The practice of giving manure to the roots of plants by pipes under the surface, had been in some instances practiced by ingenious gardeners, in the growing of celery more particularly, but the carrying out of the principle in the general and complete manner shown at Caversham, is considered by Mr. Wilkins to have been his own discovery; and he has obtained a patent for it.

Mr. Wilkins prepares the manure in a covered tank, similar to a tanner's bark liquid-pit, of a size proportioned to the quantity required for the garden. This tank has a false bottom, placed at from one to two feet from the bottom of the tank, and pierced with numerous small holes.

Into this tank are thrown solid manures, such as dung from stables and cow-houses, pigstys, street-sweepings, and various animal and vegetable refuse substances. It is then filled with water, which, in passing through the manuring matter, becomes impregnated with its elements; it trickles through the perforated bottom, and thus strained, is pumped up into a tank on a higher level, to give it a fall into a pipe which conveys it to the beds in which the crops to be irrigated by it are growing.

The ground is laid out in beds three feet in width, and divided into equal lengths by a walk, on one side of which the beds are watered on Mr. Wilkins's principle, while on the other they are not.

Thus crops under both modes of treatment may be compared.

**Description of the Mechanical Arrangements.**—The beds, under this

new system, are prepared thus: the earth is dug out to the depth of about two feet, and the perfectly level bottom is covered with bricks or tiles (or it may be more cheaply done with concrete) quite watertight, with bricks on edge at the four sides, to prevent the liquid from escaping. Upon the bottom is laid, the whole lengthway of the bed and midway, a line of half-round drain-tiles, laid together (the convex part uppermost) in the usual way. At the end of each bed next the walk, a pipe is slantingly fixed, inclining downward to the main channel, for the purpose of conveying the liquid into it, and an upright pipe is placed at the other end as an index, by which any one looking into it, or gauging the depth, can tell the height to which the moisture rises.

The surface being prepared as described, the earth that had been removed is thrown back again.

By means of a gutta-percha hose, with arms that can be turned to each bed, furnished with stop-cocks, the liquid can be supplied to all or any of the beds at once. It passes along their entire length at bottom, rising through the interstices between the pipes; and being absorbed by the earth, it feeds the roots of the plants. None of it runs to waste: it cannot escape through the bricks.

That this system of applying manure is productive of great results, no one who has seen Mr. Wilkins's crops can doubt. The plants are directly supplied with food in the form in which it is most suitable to them; none of it is lost by evaporation, which in surface irrigation must take place. Neither scorching heat of the sun, nor parching wind, deprives it of its most precious qualities. The plants imbibe the full amount of nourishment which the manure contains: there is no waste whatever.

On the beds thus prepared and thus manured, the differences in some of the crops were in the following proportions:

On the new beds, mangolds weighed about three times more than those grown on the opposite beds treated in the old way.

Swedes measured twenty-three and a half inches in girth in the one instance, and less than half this in the other.

The yield of wheat, peas, and beans was double the amount on the watered beds.

A single potato grown in mere sand produced ninety-four tubers, while two planted under the old system produced but seventy-seven. A single ash-leaved kidney planted in saw-dust yielded, under the new system, one hundred tubers, weighing twenty-four pounds.

Similar differences were seen in the crops of hemp, flax, hops, Lucerne and Italian rye-grasses: five cuttings were obtained of the two last by the underground watering; while only two were obtained from the unwatered beds.

A very remarkable distinction appeared in the growth of two vine-cuttings, both planted at the same time, one receiving the liquid manure, and the other being without it—the former was about fifteen inches high when the other was scarcely four.

Gardens belonging to poor-houses and various public establishments of an industrial nature, might, to some extent at least, be treated on this plan. On very poor and otherwise almost worthless soils, the sys-

sem would be especially valuable. The soil would be only important to give fixity to the roots; therefore its quality would not be a very important consideration wherever the liquid tank and a brick or cement flooring of the garden were provided.

A tub would answer the purpose of a tank on a small scale, and the liquid could be poured by hand from any convenient utensils down the throat of an inclined pipe into the horizontal pipe below, whenever moisture might be required by the roots below. There is no expense of any moment involved in a simple contrivance of this nature for poor-house and parochial-school gardens; such an arrangement as Mr. Wilkins has effected would be highly economical and effective.

The formation of a well-contrived cesspool in a convenient position would be more than half the work to be accomplished.

## THE FRUIT-GARDEN.—THE FRUITS TO CULTIVATE.

IN "THE KITCHEN-GARDEN" we have described the fruits appropriate to it, and their modes of culture. We will here confine our attention to the Fruit-Garden proper, and its appropriate fruits, which are

Apples, Pears, Peaches, Plums, Cherries, Apricots, Nectarines.

Before proceeding to describe the varieties and mode of culture of the particular fruits, we will speak concisely of the different methods of propagation, planting, and pruning.

**HOW TO PROPAGATE FRUIT-TREES.**—This is effected by *Seeds, Cuttings, Layers, Grafting, and Budding.*

**Cuttings** consist of a portion of the wood of one year's growth inserted into the soil. They should be from eight to ten inches long, and all the lower buds removed. The earth should be closely pressed about them, and mulched, and the cutting shielded from the direct rays of the sun. The gooseberry, currant, grape and quince are easily propagated by cuttings.

**Layers.**—The annexed figure will show how layering is accomplished. If a cut be made on the under side of the branch, as shown in the engraving, it will facilitate the striking of roots. The center should be buried about four inches in the soil. It may be done in spring, or about mid-summer, and the roots transplanted the following spring. After the buds of the grape-vine have started a few inches it may be laid along the surface and covered with soil, when each bud will take root.

**Grafting.**—The following are the different forms described by J. J. Thomas in the "American Fruit Culturist."

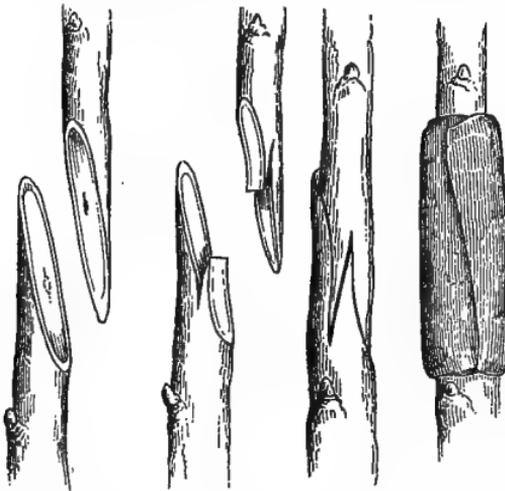


Fig. 15.

Fig. 16.

Fig. 17.

Fig. 18.

The annexed figures represent the two most common modes of grafting fruit-trees; figs. 15 to 18 representing successive stages of tongue or whip grafting, from the sloping cut of the scion and stock, to the completion of the operation by the covering with the wax plaster. Fig. 19 shows a stock cut off for cleft-grafting with the upright cleft separated by an iron or steel wedge, ready for the graft; fig. 20, cut wedge-form to fit it; and fig. 21, the graft in its place, after the wedge has been withdrawn, the projecting angle of the stock sloped off with a knife, and the whole ready for the application of the wax.

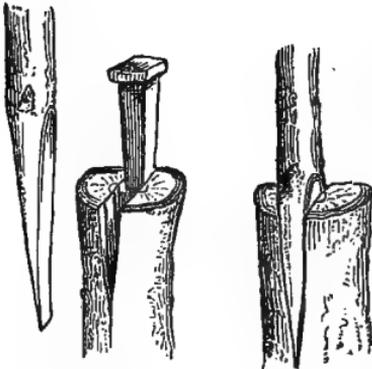


Fig. 20. Fig. 19.

Fig. 21.

Whip grafting is particularly applicable to small stocks, or where the graft and stock are nearly of equal size; and cleft-grafting to stocks considerably larger than the scion. In all cases, where the stock is in any degree larger, the graft must be placed toward one side, so that the line between the bark and wood may exactly coincide at one point at least in both, as in the cross section of cleft-grafting.

There are other modifications of grafting which are often useful. In saddle grafting, the stock is sloped

off on each side, giving it the form of a wedge, fig. 23, *a*; the graft is split in the middle, and each side thinned away with the knife, as in fig. 23 *b*, until it will closely fit when placed like a saddle upon it, fig. 24. The most perfect way to fit the graft, is to make a long sloping cut from the outer edge or bark, by drawing the blade from heel to point, till it reaches the center of the graft; and then another similar cut completes the acute cavity for fitting the wedge of the stock. A sharp, broad, and thin blade, is needed for this operation. A wax plaster, drawn closely round the place of union, completes the work. When the stock and graft are very nearly of equal size, this is a very perfect mode of grafting, as large corresponding surfaces are made to fit, and the graft receives freely the ascending sap.

In all these modes of grafting, whenever a wedge is made to enter a cleft, it should be thicker on the side where the fit is made between the two parts, so as to receive at that side the full pressure of the cut faced as shown in fig. 22.

Grafts may be cut at any time after the cessation of growth late in the summer, and before the spring growth commences. But they must be kept in a damp place. Wet moss is the best material in which to preserve them.

**Grafting-Wax**, made as follows, should neatly cover all the splits and cuts made in grafting: four parts rosin, three parts beeswax, and three parts lard. In these, after being melted and thoroughly mixed, strips of cotton cloth should be dipped, and cut when cold to any desired length and width.

**Budding.**—Common shield budding consists in leaving a small piece of wood at the base of the bud inserted, instead of taking all out. An incision is made lengthwise through the bark of the stock, and a small cut at right angles at the top, the whole somewhat resembling the let-

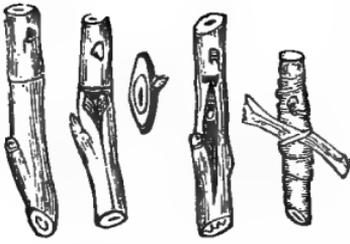


Fig. 3. Fig. 5. Fig. 4. Fig. 6. Fig. 7. ter T, fig. 3. A bud is then taken from a shoot of the present year's growth, by shaving off the bark an inch or an inch and a half in length, with a small part of the wood directly beneath the bud, fig. 4. The edges of the bark, at the incision in the stock, are then raised a little, fig. 5, and the bud pushed downward under the bark, fig. 6. A bandage of bass-bark, woolen yarn, or other substance, is then wrapped around, commencing at the bottom and passing the bud, returning again and tying just below, covering all but the bud, fig. 7. The pressure should be just sufficient to keep the inserted portion closely to the stock, but not such as to bruise or crush the bark. In about ten days or two weeks after insertion, the strings will require to be loosened, and at the expiration of three weeks removed altogether. The ensuing spring, as soon as the buds begin to swell strongly, cut off the stock about six inches above the bud; and as the shoot or bud grows, tie it to the piece of stock above its insertion until about midsummer, when it will be time to cut away the piece of stock above the bud, leaving a sloping cut downward from the top of insertion of bud.\*

The leaf should be cut off to within half an inch of the bud, as otherwise the evaporation would destroy its vitality. From July to the middle of September is the season for budding, choosing always cloudy weather, and the time when the bark freely cleaves from the wood.



ROOTS OF A TREE ENTIRE.

**Transplanting.**—Trees should be taken up with the roots as perfect as possible, bearing in mind that the roots of a tree extend every way as far as the branches; and in proportion as the roots have been shortened in taking up, in the same proportion should the branches be shortened in setting out. The soil in which the trees are to stand should be deeply subsoiled, two feet at least, or pits six feet across should be opened to that depth, the surface soil returned to the bottom, and the subsoil

mixed with very rotten manure next thrown in, and the tree itself planted in fine loam. It should stand at the same depth as in the nursery.

The annexed cut will show the appearance of a tree with its roots entire, and the nearer an approach is made to it in the taking up and setting, the better the operation is performed.

*Time to Transplant.*—As a general rule the autumn is the best time, though if done in spring, care should be taken to mulch thoroughly the transplanted trees.

*Pruning.*—Mr. Barry judiciously remarks: "It is not only necessary to know what and why, but also how to prune. Theory is only useful as it serves to guide in practice.

"The great point to be observed in making incisions on the stems and branches of trees, is to provide for the speedy and perfect healing of the wounds or cut surfaces. In removing a portion of a branch or stem, if we cut between two joints, and thus leave a portion of wood above the

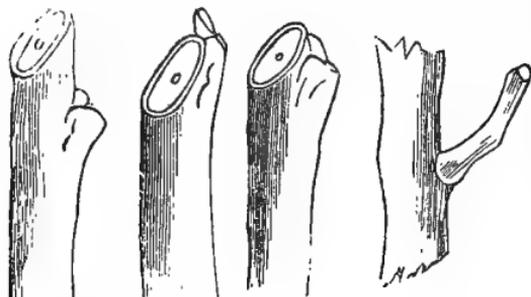


Fig. 1. Fig. 2. Fig. 3. Fig. 4.

Fig. 1, cutting too far above the bud. Fig. 2, cutting too close. Fig. 3, the cut as it should be. Fig. 4, removal of branches, the cross line indicating the proper place for the cut.

bud intended to be cut to, as in fig. 1, this wood dies, and we have the trouble of another pruning to remove it. If we cut too close to the bud, and thus remove a portion of the wood with which it is connected, as in fig. 2, the bud will either die or disappoint us by producing a very feeble growth. The proper way is to take the branch to be operated on in the left hand, place the

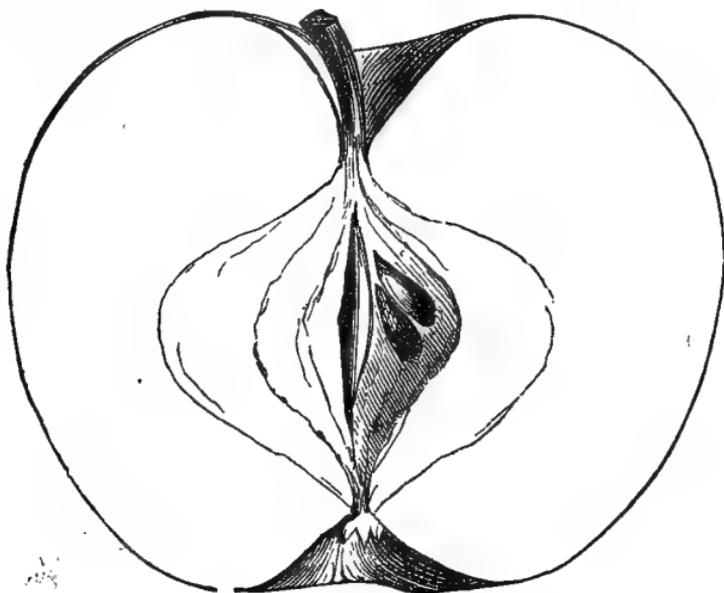
edge of the knife on it, opposite the lower part of the bud to be cut to, and then make a firm, quick, smooth draw-cut, sloping upward, so that the knife will come out on a level with the point of the bud, as in fig. 3. In soft-wooded, pithy trees, like the grape-vine, for example, half an inch of wood ought to be left above the bud. The cut should also be made, as much as possible, on the lower side of the branch, to prevent rain from lodging in the center. The position of the bud cut to, is also worthy of consideration in pruning, to produce or modify certain forms. When we wish the new shoot of a lateral branch to take as much as possible an upright direction, we prune to a bud on the inside; and if we wish it to spread, we choose one on the outside. In the annual suppression, or cutting back young trees, to form a stem or side-branches, the bud selected to form the leader is chosen on opposite sides every successive year, in order to maintain the growth in a straight line. If cut every year to a bud on the same side, it would, in a few seasons, show an inclination to that side injurious to the symmetry of the tree."

*The season for pruning* is generally at the end of the first growth in July or August, or late in autumn or winter, but not in the spring. Spring pruning is discountenanced by all the best authorities on fruit-culture. Large branches when cut should receive a coat of shellac dis-

solved in alcohol, of the consistence of paint, and applied with a brush. It adheres firmly, keeps out the air, aids the perfect healing of the wound, and can be easily and rapidly applied.

### THE DIFFERENT FRUITS TO CULTIVATE.—SELECT VARIETIES AND MODE OF CULTURE.

We shall not attempt here to name, much less to describe the *nine hundred varieties* of the apple, to be found in our later and larger fruit-books. Such a formidable array of names would tend to embarrass and confuse, rather than instruct and satisfy the great majority of fruit cultivators. What they most need is a classification and description of the best-known varieties of the different fruits, adapted to the different seasons and localities, and in sufficient number and variety to meet the wants of cultivators generally. This has been our aim. The list we give contains those fruits only which have been thoroughly tested, and which are worthy of general cultivation. We adopt, by permission, the description of fruits from the "American Fruit Culturist," by J. J. Thomas, a work of superior excellence, and on which the fullest reliance can be placed. It is the production of one who writes with the largest practical experience and love of the pursuit, an exact and liberal culture, and that fidelity and care in his statements which give them paramount value.



THE APPLE.—SELECT VARIETIES.

**SUMMER APPLES.**—*Bough.*—(*Syn.* large yellow bough, sweet bough, early sweet bough.) Large, roundish, remotely conical-ovate, sometimes distinctly conical; pale, greenish yellow, stock one-half to an inch long, basin narrow, deep; flesh white, very tender, with an excellent sweet flavor. Ripens from the middle to the end of summer. A mod-

erate and regular bearer. Shoots yellowish, somewhat irregular, ascending; tree round-headed; leaves obtusely crenate.

**Summer Rose.**—(*Syn.* Woolman's early, Woolman's striped harvest.) Medium, or rather small, roundish oblate; yellowish, blotched, and streaked with red; stalk rather short; basin round, slightly plaited; flesh very tender, slightly crisp; texture fine, mild subacid, juicy, excellent. Begins to ripen with wheat harvest, and continues a month. Fine in all localities. Better in quality for the table than early harvest, but less productive.

**Golden Sweet.**—Medium, or rather large, roundish, slightly flattened; greenish, becoming pale yellow; stalk an inch or more long, slender; cavity acuminate; basin moderate; flesh very sweet, good, hardly first rate. The fruit is always fair, the tree a free grower, and very productive. Buds large; leaves sharply serrate. Late in summer. Valuable for domestic animals.

**American Summer Pearmain.**—(*Syn.* early summer pearmain of *Coxe.*) Medium in size, oblong, slightly inclining to truncate-conical; nearly covered with fine broken streaks and dots of red; stalk nearly one inch long; basin round, even, distinct; very tender, often bursts in falling, subacid, flavor fine. Continues to ripen for several weeks in late summer and early autumn. Needs good and rich cultivation. Growth rather slow. This is distinct from the English summer or autumn pearmain, in its larger size, higher red, more oblong form, and superior quality.

**Early Harvest.**—(*Syn.* yellow harvest, prince's harvest, early French reinette, July pippin.) Size, medium, roundish, usually more or less oblate, smooth; bright straw-color, when ripe; stalk rather short and slender; calyx moderately sunk; flesh nearly white, flavor rather acid, fine. Ripens at wheat harvest and for three weeks afterward. Shoots erect, slightly diverging, straight, often forked. Very productive. Needs rich cultivation to be fine. Good throughout the Northern states.

The **Tart-Bough** is similar, but two weeks later, and inferior in quality; the growth more vigorous and upright.

**Early Joc.**—Size, medium, or rather small; oblate, sometimes obscurely approaching conical; smooth and regular; color, with numerous short, broken red stripes on yellow ground, a nearly uniform deep red to the sun, with conspicuous white specks; stem three-quarters of an inch long, rather thick; cavity shallow, acute; basin small, even; flesh fine-grained, very tender, slightly crisp, juicy, subacid, spicy, excellent. Ripens the last two weeks of summer. Shoots dark, growth slow. A profuse bearer. Origin, East Bloomfield, New York.

**Early Strawberry.**—(*Syn.* American red Juneating, of *Manning.*) Rather small, roundish, varying to round-ovate, and sometimes quite conical; surface indistinctly and finely striped with bright and deep red, tinging faintly the flesh; stalk tender, three-quarters to an inch and a half long; basin small and narrow; flesh white, tender, subacid, rather brisk, pleasant, not very rich. Ripens one to three weeks later than yellow harvest. Growth, very erect; leaves erect, finely crenate. Productive. Good in all localities.

**Garden Royal.**—Below medium, roundish, slightly flattened at ends,

even and regular; surface with small, broken red stripes on yellow ground, deep red to the sun; stalk short, or half to three-fourths of an inch long, slender, cavity acute; calyx large, open; basin very shallow; flesh yellowish-white, exceedingly tender and fine-grained; flavor mild, subacid, fine. A poor grower, but a first-rate dessert fruit. Late summer. Origin, Sudbury, Massachusetts.

**Porter.**—Rather large, oblong ovate-conical, regular, often ribbed at the apex; bright yellow, sometimes a dull blush in the sun; stalk one inch long, slender, cavity rather small; basin narrow; flesh tender, rich subacid, of fine flavor. Fair and productive. Early autumn. Good throughout the Northern states. Leaves sharp serrate.

**Red Astrachan.**—Rather large, sometimes quite large, roundish-oblate, slightly approaching conical, rather smooth; nearly whole surface brilliant deep crimson, with a thick bloom like a plum; stalk one-half to three-fourths of an inch long; calyx in a small, slightly uneven basin; flesh white, rather crisp; good, rather acid, very slightly austere. A few days after early harvest. Excellent for cooking. Shoots stout, dark brown, diverging and ascending; leaves broad. This apple, although of second-rate flavor, is rendered by its earliness and very handsome and fair appearance, by the vigor and productiveness of the tree, and its excellent culinary qualities, worthy of general cultivation.

**Sine Qua Non.**—Size, medium; roundish, inclining to conical; smooth, pale greenish-yellow, shaded with reddish-brown to the sun; stalk quite slender, nearly an inch long; basin smooth, or very slightly plaited; flesh greenish-white, fine-grained, delicate, very tender, moderately juicy, of a fine, agreeable, subacid flavor. Shoots greenish-yellow, growth slow; fruit always fair, tree very productive. Ripens two weeks after early harvest. Origin, Long Island.

**Summer Bell-flower.**—Rather above medium, round-ovate, slightly oblong and conical; yellow, with sometimes a faint orange blush; stalk an inch long, cavity shallow; basin small, smooth, slightly five-sided; flesh white, fine grained, tender, rich, subacid, fine. Shoots vigorous, upright; bears well every year. Origin, Dutchess County, New York. New.

**Williams' Favorite.**—(*Syn.* Williams, Williams' red, Williams' favorite red.) Size, medium, sometimes rather large; oblong-ovate, remotely conical, very smooth; color, mostly fine dark crimson stripes; stalk three-quarters to one inch long, enlarged at insertion, cavity shallow; basin small and shallow, even or somewhat ribbed; flesh yellowish white, moderately juicy, with sometimes a tinge of red near the surface, mild, agreeable, fine. Ripens for several weeks late in summer. Its handsome appearance has partly contributed to its high reputation. Origin, Roxbury, Massachusetts.

**AUTUMN APPLES.**—**Jersey Sweeting.**—Size, medium; round-ovate, often oblong-ovate, somewhat conical; thickly striped with fine red on greenish yellow; stalk one-half to an inch long; cavity rather irregular; basin wrinkled, distinct; flesh whitish, very sweet, juicy and tender, good second-rate or nearly first-rate in flavor. Good in all localities. Early and mid-autumn—immediately follows golden sweet. Shoots stout, short-jointed; leaves crenate-serrate.

**Peach-Pond Sweet.**—Size, medium; roundish-oblate, remotely conical; delicately striped light red on pale greenish-yellow; stalk slender, varying in length from half an inch to an inch; tender, rich, sweet. Nearly or quite first-rate. Mid-autumn. Origin, Dutchess County, New York.

**Autumnal Swaar.**—(*Syn.* sweet Swaar.) Large, oblate, sometimes very slightly ribbed; rich yellow; stalk an inch or more long, varying from long and slender, to thick and fleshy at insertion; cavity and basin wide and slightly ribbed; flesh tender, yellowish, not juicy, with a very sweet, spicy, agreeable flavor. Mid-autumn. Growth vigorous, shoots diverging, tree spreading. One of the finest autumn sweet apples.

**Gravenstein.**—Rather large, roundish, slightly oblate, obtusely and obscurely ribbed, surface a little wavy; striped and splashed with bright red on a yellow ground; stalk three-quarters of an inch long, cavity rather deep; calyx large; basin deep, narrow; flesh tender, juicy, very rich, subacid or rather acid, high-flavored. Mid-autumn. Productive, handsome and excellent. Fine in all localities. Shoots strong, becoming smooth and shining, ascending. German.

**Haskell Sweet.**—Large, oblate, regular, greenish, a warm brown cheek; stalk one-half to three-fourths of an inch long, moderately sunk; basin rather deep, nearly even, flesh tinged with yellowish brown, very tender, sweet, good. R. Manning says this is the best of autumn sweet apples.

**Summer Sweet Paradise.**—Large, roundish, sometimes remotely oblong, and slightly flattened at the ends, regular, pale green; stalk rather thick, three-quarters of an inch long; basin large, distinct; flesh tender, sweet, rich, aromatic, of first-rate flavor. Ripens first of autumn. Shoots spreading, leaves sharply serrate. Origin, Pennsylvania.

**Late Strawberry.**—(*Syn.* strawberry, autumn strawberry.) Size, medium; roundish, slightly conical, sometimes faintly ribbed; nearly whole surface with small broken streaks of light and dark red; stalk slender, about an inch long; basin ribbed; flesh yellowish white slightly fibrous, very tender and juicy, with a fine, very agreeable, subacid flavor. Young trees of remarkable thrifty growth, leaves sharply serrate, which at once distinguishes them from the crenate leaves of the early strawberry. Ripens early in autumn, and often keeps till winter. Very productive. One of the best early autumn apples.

**Dyer.**—(*Syn.* pomme royal, which is the original name.) Rather large, roundish, often approaching round oblong, sometimes slightly flattened, obscurely ribbed; light yellow, rarely a faint brown cheek, and sometimes a slight russet network over the skin; stalk three-fourths to one inch long; basin often deep and large, ribbed; flesh very fine-grained, tender, very juicy, with a rich subacid or rather acid, excellent flavor, having but few equals.

**Fall Pippin.**—(*Syn.* Holland pippin, erroneously.) Very large, roundish, obtuse, somewhat oblong-conical, a little flattened at the ends, sometimes with large obtuse ribs; color greenish, becoming a high-rich yellow when ripe, with some large shades of green about the crown before fully ripe, stalk large, in an acuminate cavity; basin deep; flesh yellowish, rather firm, becoming tender, rich, aromatic, excellent.

Leaves sharply serrate; shoots vigorous, rather dark, diverging, becoming spreading; tree large. Late autumn, keeping into mid-winter.

**Hawley.**—(*Syn.* Dowse.) Quite large, roundish, slightly conical, sometimes nearly round, with a broad obtuse apex, and slightly flattened; smooth, slightly oily when kept within doors; pale green becoming yellow, sometimes a very faint orange cheek; stalk one-half to one inch long, slender; cavity wide, deep, acute, sometimes slightly obtuse; basin deep, slightly furrowed; flesh yellowish white, fine-grained, quite tender, with a mild, rich, subacid, fine flavor. Ripens at mid-autumn. A very valuable apple. Shoots of rather slow growth. Origin, Columbia County, New York, and cultivated chiefly in western New York.

**Orne's Early.**—Rather large, somewhat ribbed, pale yellow, sprinkled with thin russet, and with a dull red cheek toward the sun. Flesh white, very tender, juicy, and with an exceedingly pleasant and fine flavor. Ripens the first of autumn.

**Late Strawberry.**—(*Syn.* strawberry, autumn strawberry.) Size, medium; roundish, slightly conical, sometimes faintly ribbed; nearly whole surface with small broken streaks of light and dark red; stalk slender, about an inch long; basin ribbed; flesh yellowish-white, slightly fibrous, very tender and juicy, with a fine, very agreeable, subacid flavor. Young trees of remarkable thrifty growth, leaves sharply serrate, which at once distinguishes them from the crenate leaves of the early strawberry. Ripens early in autumn, and often keeps till winter. Very productive. One of the best early autumn apples.

**WINTER APPLES.**—**Baldwin.**—Rather large, roundish, with more or less of a rounded taper toward the apex; shaded and striped with yellowish red and crimson on yellow ground; stalk three-quarters of an inch long, rather slender; calyx in a narrow, slightly plaited basin; flesh yellowish white, with a rich, mild, subacid flavor. Young tree vigorous, upright, shoots dark brown, diverging and ascending. Very productive. Ripens through winter. A first-rate winter apple through New England and New York; unsuccessful in northern Ohio. The use of special manures, as lime, potash, and salt, has, however, on those unfavorable localities, been attended with the best results, and produced fine fruit; showing the deficiency to be in the soil.

**Newtown Pippin.**—(*Syn.* pippin, green Newtown pippin.) Medium or rather large, roundish, oblique, slightly irregular, remotely conical, or else a little flattened; dull green becoming yellowish green; often with a dull brownish blush; stalk short, deep set, and surrounded by thin, dull, whitish russet rays; basin narrow, shallow; flesh greenish white, juicy, crisp, fine-grained, with a high, fine flavor. Keeps through spring, and retains remarkably its freshness. Tree of rather slow growth, with a rough bark. The fruit is very liable to black spots or scabs, unless under high, rich, and constant cultivation, with a good supply of lime in the soil. One of the best fruits for foreign markets. A native of Newtown, Long Island, and has rarely succeeded well in New England.

**Roxbury Russet.**—(*Syn.* Boston russet, Putnam russet of Ohio.)—Medium or large, roundish-oblate, remotely conical, partly or wholly covered with rather rough russet on greenish yellow ground, sometimes a dull brown cheek; stalk one-half to an inch long, cavity acute; basin round

moderate; flesh greenish-white, rather granular, slightly crisp, with a good subacid flavor. Keeps late in spring. Large specimens become conical, with short thick stalks; small specimens are more flat, and with longer and more slender stalks. Growth spreading, shoots downy. Although not of the highest flavor, its productiveness, uniformly fair fruit, and long keeping, render this variety one of the most profitable for orchard culture. It succeeds well throughout the Northern states, but partially fails in a few localities in Ohio.

**Hubbardston Nonesuch.**—Large, round-ovate, largest at the middle, nearly regular; color with small broken stripes and numerous dots of light rich red on a rich yellow ground; stalk three-fourths to one inch long; cavity acute, russeted; calyx open, basin ribbed; flesh yellowish, very rich, slightly subacid, with a strong mixture of a rich sweet; flavor excellent. Early winter. Equal to the Swaar in richness, superior to the Baldwin in flavor. Shoots rather slender, gray. A native of Hubbardston, Massachusetts.

**Wagener.**—Medium or rather large, oblate, obscurely ribbed, shaded, and indistinctly striped with pale red, and a full, deep red in the sun, on warm yellow ground; often streaked with russet; stalk three-fourths of an inch long, cavity wide, rather obtuse; basin even, rather large; flesh yellowish, very fine-grained, tender, compact, mild, subacid, very aromatic, excellent. Ripens through winter. A native of Penn Yan, New York. New.

**Rhode-Island Greening.**—(*Syn.* greening.)—Large, roundish-oblate; green, becoming greenish yellow, always fair, a dull brown blush to the sun; stalk three-fourths of an inch long; basin rather small, often slightly russeted; flesh yellow—a rich yellow if much exposed to the sun, and whitish-yellow or greenish-white if much shaded—tender, juicy, with a rich, rather acid flavor. Growth strong, young trees crooked or oblique, shoots rather spreading, leaves sharp serrate; best on light soils; very productive, single trees often yielding forty bushels of fair fruit in favorable years, and neglected orchards five hundred bushels per acre. Fine throughout the Northern states, where it keeps through winter into spring; but fails, from a deficiency in the soil, through most parts of central and southern Ohio; and at Cincinnati and St. Louis becomes an autumn fruit.

**Red Canada.**—(*Syn.* nonesuch, old nonesuch of Massachusetts, Richfield nonesuch of Ohio.)—Medium in size, roundish-conical, regular; nearly the whole surface covered with red, and interspersed with large and rather indistinct whitish dots; stalk about an inch long, in a very wide and even cavity; basin nearly even, moderate; flesh fine-grained, compact, with a rich subacid, high, and excellent flavor. Keeps through winter. Shoots rather slender, leaves wavy. Productive; fruit smooth and fair. Succeeds equally in New England, New York, and Ohio. This is wholly distinct from the nonesuch of England, to prevent confusion with which the name Red Canada is preferred.

**Northern Spy.**—Large, roundish, slightly conical, often flattened, sometimes slightly ribbed, handsomely striped with red; stalk and calyx deep set; flavor mild agreeable, mild subacid, fine. Keeps through winter and late into spring; preserves its flavor remarkably fresh. Shoots

dark, spotted, erect, stout. To afford fine fruit, the tree must be kept thrifty by good cultivation. A native of East Bloomfield, New York.

**Spitzenburgh, Esopus.**—Rather large, round-ovate, slightly conical; surface a high, rich red, rather obscurely striped; stalk three-fourths of an inch long, rather slender; basin shallow, slightly furrowed; flesh yellow, firm, crisp, spicy, rather acid, nearly unequaled in its high, rich flavor. Keeps through the winter. Shoots ascending and erect, rather slender, leaves crenate. Usually a moderate bearer. Succeeds best in New York, its native state.

**Yellow Newtown Pippin.**—Medium, or rather large, roundish, slightly oblong and oblique, more or less flattened; yellow, with a brownish-red cheek, purplish before ripe; stalk very short; flesh firm, crisp, with a rich, mild flavor. Closely resembles the green Newtown pippin, and believed by many to be identical, differing only by a warmer exposure. It is fairer in some localities than the green, but is usually inferior to it in flavor. The growth of the two varieties is only distinguished in the large trees.

**Bailey Sweet.**—(*Syn.* Patterson sweet, Edgerly sweet.) Large, regular-ovate, often slightly and sometimes considerably ribbed; the whole surface frequently a full bright red, in small, broken, indistinct stripes and dots, on light ground; stalk slender, one inch long; cavity small, narrow, slightly ribbed; basin small, plaited; flesh very tender, not juicy; a pure, mild, rich, sweet; fine. Early winter. Origin, Perry, Wyoming county, New York. New.

**Tallman Sweeting.**—(*Syn.* Tolman's sweeting.) Medium or rather large, roundish oblate, slightly conical; clear light yellow, with a clear brownish line from stalk to apex; stalk nearly an inch long; calyx in a distinct, slightly wrinkled basin; flesh white, firm, rich, very sweet. Excellent for winter baking. Keeps into spring. Young tree vigorous, upright, shoots becoming spreading; leaves wavy. Productive.

**Ladies' Sweeting.**—Rather large, roundish ovate, apex narrow; striped with red on pale yellowish-green ground, a nearly uniform shade of fine red to the sun; faintly marbled or clouded with white over the red; and cavity faintly rayed with white; stalk short, cavity small; calyx and basin small; tender, juicy, agreeable, fine, rich.

**Sweet Russet.**—Large, ovate-conical, largest at middle, tapering slightly to base, and much narrowed to apex; green becoming yellow, with patches of russet; stalk one-half to an inch long, cavity narrow; basin narrow, uneven; flesh tender, rather spongy, with a good and quite sweet flavor. Fair and productive. Considerably cultivated in western New York and elsewhere. Early winter.

**THE SIX BEST WINTER APPLES** recommended by the Ohio Pomological Society in 1857, are Rhode Island greening, Rambo, Esopus Spitzenburgh, Roxbury russet, Baldwin, yellow bell-flower.

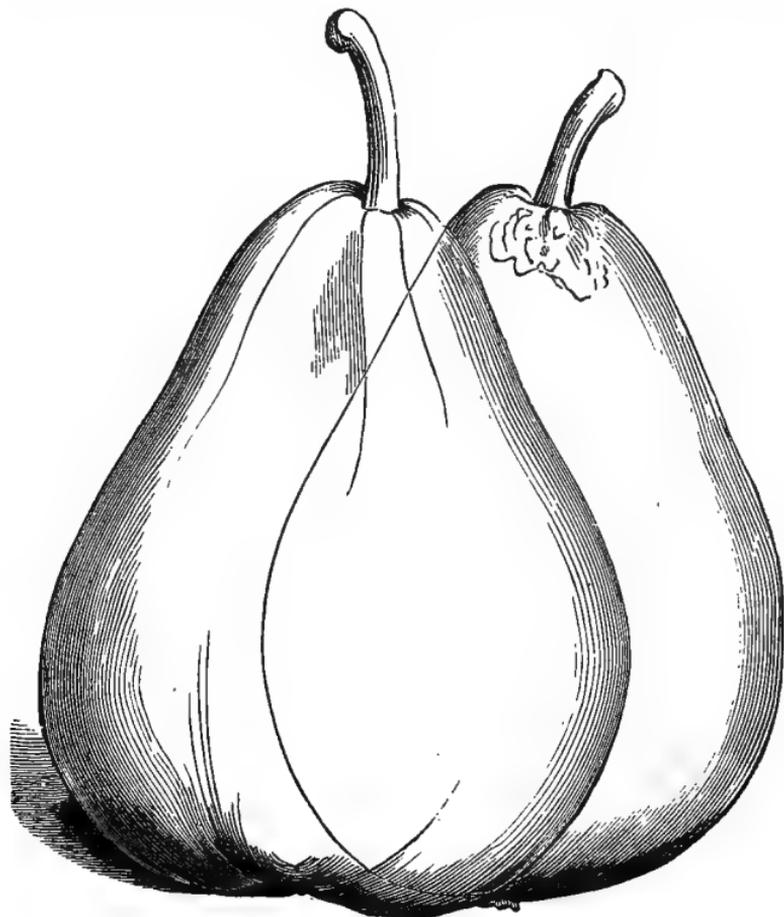
**FRUIT FOR THE WEST.**—Twenty Best Apples for an Orchard of 100 Trees.—**Summer Apples.**—Five red June, two sops-of-wine, five summer Permooch, three red Astrachan, two Cooper's early white, two Leicester sweeting.

**Fall Apples.**—Three Tompkins, five Snow, two fall wine, three Hawley, two sweet wine, two cloth of gold.

**Winter Apples.**—Ten Dominie, ten Wagener, ten willow twig, two white bell-flower, two yellow bell-flower, ten New York pippin, ten red seek-no-farther, ten Swaar.

**SELECT LIST FOR THE SOUTH.**—**Summer Apples.**—Red June, Julian, bough, horse-apple, fall pippin, buffs, Meigs, Waddel's hall, or Shockley, Batchelor, or King.

**Winter Apples.**—Maverick sweet, Nickajack or Summerover, Callasaga, berry, Disharoon, Camak's sweet, never-fail, Mangum, red warrior, Carter.



THE PEAR.—SELECT VARIETIES.

The varieties of the pear, like those of the apple, are exceedingly numerous, some lists embracing over a *thousand different kinds*. We select only those of established excellence, and in sufficient number to meet the wants of general cultivators.

**SUMMER PEARS.**—Bartlett.—(*Syn.* Williams' Bonchretien.) Quite large, obtuse-pyriform, slightly obconic, surface wavy, clear yellow, sometimes a faint blush; stalk an inch and a fourth long, stout, slightly sunk; basin little or none; apex slightly plaited, sometimes smooth; flesh nearly white, very fine-grained, exceedingly tender and buttery,

with a nearly sweet, sometimes faintly subacid, perfumed, fine, moderately rich flavor. Ripens in the end of summer and beginning of autumn; and far north, is strictly an autumn pear. The fruit, when not fully grown, ripens and becomes of good quality if kept in the house a week or two. Growth erect, vigorous, leaves folded, slightly recurved; shoots yellowish. Tree very productive and bears very young. Although not of the first class as to flavor, the many fine qualities of this pear render it a general favorite.

**Tyson.**—Size medium, often rather large, obconic-pyriform, sometimes approaching obconic-obovate; bright yellow, with a reddish-brown softly-shaded cheek, often some russet; stalk an inch and a fourth long, inserted into a fleshy prominence abruptly contracted from the rounded neck; basin very shallow, even; flesh of fine texture, buttery, very melting, juicy; flavor nearly sweet, aromatic, slightly perfumed, excellent. Ripens the last two weeks of summer. Shoots quite dark-brown, erect, vigorous. The tree does not come soon into bearing. Pennsylvania.

**Rostiezer.**—Rather small, sometimes medium in size; obconic-pyriform, approaching obovate, regular; skin dull brownish-green, with a dark, dull, reddish-brown cheek to the sun, with whitish specks and traces of thin russet; stalk an inch and a half to two inches long, slender, scarcely sunk; basin little or none; flesh, juicy, melting, sweet, with a very high perfumed flavor, of high excellence. Ripens late in summer. For rich flavor it has scarcely an equal among summer pears. Shoots dark.

**Madeleine.**—(*Syn.* Citron des Carmes, Magdelen, green chisel, *incorrectly*.) Medium in size, obconic-obovate, obscurely pyriform; skin smooth, pale yellowish-green, rarely a faint brownish blush; stalk slender, an inch and a half long, cavity very narrow and small; basin very shallow; flesh very juicy and melting, usually faintly acid, with an agreeable, delicate, fine, refreshing flavor. Matures about mid-summer, or at the time of wheat harvest. Needs house-ripening. Shoots straight, erect, greenish, growth vigorous; tree rather liable to blight. Leaves quite flat.

**Summer Doyenne.**—(*Syn.* Doyenné d'Été). Small; round-obovate, slightly turbinate; stalk an inch or an inch and a fourth long, rather stout, slightly oblique, not sunk; basin very shallow; skin a fine yellow, with a warm cheek brightly reddened at the crown; and with radiating stripes of greenish-yellow from the calyx; flesh melting, juicy, sweet, with a pleasant but not high flavor. Skin thin; core small; seeds small, white. Ripens with the Madeleine, and nearly equal to it in quality. Tree bears very young. Shoots slender, reddish-brown. New.

**Bloodgood.**—Size medium; turbinate, approaching obovate, base contracted abruptly to the stalk; yellow, touched with russet; stalk fleshy at insertion, an inch and a fourth long, set on the rounded base without depression; calyx scarcely sunk; flesh yellowish-white, buttery and melting, with a fine, rich, aromatic flavor. Sometimes rots at the core. On some soils the flavor becomes poor and insipid. Ripens immediately after jargonelle and skinless, or the first half of August. Like all early pears, it is best if house-ripened.

**Dearborn's Seedling.**—Scarcely medium in size, obovate turbinate, regular, smooth; surface clear yellow, with minute specks; stalk an inch long, sunk little or none, basin very shallow; flesh very fine-grained,

juicy, melting, and of fine flavor. Ripens nearly with the Bloodgood, or middle of August. Shoots, straight, long, dark-brown. Tree bears when young; the fruit always fair and of first quality in nearly all localities.

**Summer Frankreal.**—(*Syn.* Franc Réal d'été). Size medium, short-obovate, slightly pyriform, with a very short, obtuse neck, body slightly conical, or tapering to the crown; green, becoming pale yellowish-green, often a faint yellowish-brown blush; stalk three-fourths of an inch long, thick, slightly sunk; calyx closed, basin furrowed; flesh white, fine-grained, buttery, melting, rich, and fine. Late summer and early autumn. Shoots and leaves rather downy, leaves large.

**AUTUMN PEARS.**—**White Doyenne.**—(*Syn.* butter pear of Pennsylvania, Virgalieu of New York, St. Michael of Boston, yellow butter, white beurré, Doyenné, Doyenné blanc.) Medium or rather large, regular obovate, obtuse, sometimes remotely pyriform; surface pale yellow, often a faint blush; stalk about an inch long, scarcely sunk; calyx small, basin shallow; flesh of very fine texture, white, buttery, melting, rich and excellent. Middle to late autumn. Shoots ascending, grayish yellow; leaves folded, recurved. It fails in many localities near Boston and elsewhere, but through inland New York and in most of the Western states, it is unsurpassed in its excellent qualities of hardy growth, fair fruit, delicious flavor and great productiveness; many trees, without receiving any care in cultivation, yielding ten or fifteen bushels of perfect fruit in a single season.

**Gray Doyenne.**—(*Syn.* Doyenné gris, gray butter pear, red Doyenné, Doyenné rouge, St. Michael Dore.) Size medium, obovate, often approaching turbinate; whole surface a handsome smooth cinnamon russet; stalk half to three-fourths of an inch long, cavity quite narrow; calyx small, closed; flesh with a very fine texture, very buttery, melting, rich, perfumed, delicious, excellent. Middle of autumn to winter. Shoots yellowish or grayish brown, ascending. Fails on some localities.

**Beurre Bosc.**—(*Syn.* calebasse bosc.) Large, very distinct pyriform, neck rather long and very narrow, acute; body large oblate; surface nearly smooth, deep yellow, russeted in patches; stalk an inch and a half long, slender, curved; basin very shallow; flesh juicy, buttery, rich, perceptibly perfumed, sweet, excellent. Mid-autumn. Growth moderate, a regular, even bearer. Fails entirely on quince stocks. Belgian.

**Seckel.**—Small, obovate, sometimes obscurely obconic-pyriform, regular; skin brownish-green, becoming rich yellowish-brown, with a deep brownish-red cheek; stalk one-half to three-fourths of an inch long, cavity and basin small; flesh very fine-grained, sweet, very juicy, melting, buttery, the richest and highest-flavored pear known. Although of slow growth, and small size, like the green gage among plums, it is regarded as the standard of excellence. Its high musky perfume is not, however, agreeable to all. Early mid-autumn. Shoots stout, short, ascending, tree very hardy. Needs rich cultivation. Origin, near Philadelphia, and succeeds well throughout the Northern, Middle and Western states, and is remarkably free from the blight.

**Louise Bonne of Jersey.**—(*Syn.* Louise Bonne de Jersey, Louise Bonne

d'Avranches.) Large, pyriform, neck somewhat obconic, body approaching oblong, tapering slightly to obtuse or flattened crown; slightly one-sided; surface smooth, pale yellowish-green, with a brownish-red cheek; stalk an inch to an inch and a half long, often fleshy at insertion, little sunk; basin shallow, flesh yellowish white, very juicy, buttery, melting, rich, faintly subacid, fine. Ripens mid-autumn; late autumn far north, early autumn at Cincinnati. Very productive; succeeds admirably and grows with great vigor on quince stocks, and should be worked on no other. Shoots dark brown or purple; serratures of the leaves rather coarse. This fine variety, like the Bartlett, is hardly of the highest quality, but is eminently valuable for its large, fair fruit, free growth, and great productiveness.

**Paradise D'Automne, or Autumn Paradise.**—Rather large, distinct pyriform; surface uneven, yellowish orange, with some thin russet patches; stalk an inch and a half long, not sunk; basin small, irregular; flesh melting, very buttery, with a rich, high and excellent flavor. Ripens about mid-autumn. Shoots yellowish, at first upright, afterward becoming straggling, growth vigorous. This pear resembles the *Beurré Bosc*, but is less smooth, more irregular in form, has a less narrow neck, is more melting and sprightly, and of more vigorous growth.

**WINTER PEARS.**—**Winter Nelis.**—(*Syn.* Nelis d'hiver, Bonne de Malines.)—Size medium; roundish-obovate, often slightly pyriform, with a neck small and short; surface yellowish-green, much russeted; stalk an inch and a quarter long, bent; cavity narrow; calyx stiff, short, basin shallow; flesh yellowish-white, fine-grained, buttery, very melting, rich, sweet, or slightly vinous, perfumed, aromatic, with an excellent flavor. Perhaps the highest-flavored of all winter pears. Early winter. Growth slender, often flexuous and straggling; leaves narrow, recurved; petioles rather long. Origin, Mechlin, in Belgium.

**Beurre d'Aremberg.**—(*Syn.* Duc d'Aremberg, Deschamps, l'Orpheline.) Large, short obconic-pyriform, approaching obconic-obovate, neck rather small; skin thick, greenish-yellow, partly russeted; stalk short or moderately sunk; basin deep, uneven, or angular; flesh buttery, melting, sugary, with a fine flavor. Requires warm, rich cultivation, to develop its good qualities. Shoots long, slender, dark brown. Grows well on the quince. Early winter. Old French.

**Prince's St. Germain.**—Size medium; obovate, obtuse; surface much russeted on green, dull red to the sun; stalk an inch and a fourth long, cavity small; calyx large, stiff, slightly cut, basin smooth, shallow; flesh yellowish-white, juicy, melting, slightly vinous, with an agreeable and fine flavor. Keeps well, ripening through winter. Origin, Flushing, Long Island.

**Beurre Gris d'Hiver Nouveau, or Gray Winter Beurre.**—Size medium; obovate, obtuse; skin greenish, considerably russeted; stalk thick, short, cavity moderate; basin small; flesh greenish, buttery, melting, very juicy, rich, slightly subacid—resembling in flavor the *beurré d'Aremberg*, but rather richer and less acid. Early winter. French. New. Promises to become valuable.

**Vicar of Wakefield.**—(*Syn.* Le Curé, Monsieur le Curé, Clion, Du-mas.)—Quite large; long pyriform, approaching oblong-obconic, with a

conical taper toward the crown; skin smooth, pale yellow, or pale yellowish-green, with a dull reddish cheek; stalk an inch to an inch and a half long, slender, often fleshy at insertion, oblique, not sunk; basin narrow, very shallow; flesh greenish or yellowish-white, juicy, buttery, with a good, second-rate flavor—sometimes slightly astringent, but if ripened in a warm temperature, it proves a good table pear. Ripens late autumn and early winter, for about three months. Growth spreading and irregular, or straggling; shoots strong, dark olive. Fine on quince stocks. The great and uniform productiveness of this pear, its fine qualities for cooking, and the long period of its continuance, render it eminently valuable.

It was formerly cultivated at Boston under the erroneous name of Bourgermester. The true Bourgermester is a third-rate pear, the wood of which cankers badly.

**Select List of Pears for Southern Cultivation.**—Madeleine, Bloodgood, Dearborn's seedling, St. Ghislain, Stevens' Genesee, golden beurré of Bilboa, Napoleon, Bartlett, Seckel, white Doyenné, Dutchess d'Angoulême, belle Lucratim, beurré Bosc, beurré Diel, Glout Morceau, winter Nelis, beurré d'Arenberg.

**Dwarf Pear.**—These are chiefly valuable where but little space can be had, as five dwarfs can be grown on the area occupied by one standard, and another advantage is, that they come earlier into bearing. They may be planted from six to ten feet apart, and the stocks should be entirely beneath the surface, to avoid the borer, which will attack the quince, but not the pear. They need, and will reward, rich cultivation and careful pruning. They should be pruned in the pyramidal form, for which the following are good directions:

"The process consists in shortening the first year's shoot of the apple or pear tree, called the graft-shoot, to one foot at a full bud. The first year, on pushing out in spring, rub off all laterals, except four or five at the bottom of the stem, to garnish it with a first tier of branches for future years. Train the leader to a stick quite perpendicular. The next winter proceed as before, by shortening the leader twelve inches at a full bud. Remove all intermediate buds as before, down the leader, and leave those at the bottom to form a second tier of laterals; and shorten the lower tier to an outside bud. After the second year's shoot, the summer pruning consists in rubbing off the laterals forming now the lower tier, above and below the branch, so as to keep them as horizontal as possible. Strengthen those that grow horizontal by pinching off the ends, if necessary. Each tier should be, as near as may be, twelve or thirteen inches one above the other; and, if possible, the branches of each succeeding tier should be so grown as to be above the intervals of the tier below. This makes a beautiful symmetrical tree, ornamental even in a flower-garden."\*

**Varieties.**—The following are good varieties: summer Dean, Doyenné d'Été, English jargonelle, Madelaine, long green of autumn, beurré Diel, glout morceau, white Dean or white Doyenné, gray Dean or gris Doyenné, striped long green of autumn, weary soldier or soldat laboureur,

\* *Gardener's Chronicle.*



DWARF PEAR-TREE. (See page 161.)

Van Mons' Léon Le Clerc, summer Franc Real, Bartlett, beurré d'Amalis, Louise Bonne of Jersey, Vicar of Wakefield, Angoulême, Duchess of

Angoulême, Easter beurré, Duchess of Orleans, beurré of Anjou, Bous-souck, Doyenné Boussouck, passe Colmar.

**Diseases.**—The blight is the only formidable enemy to pear culture; and the remedy is an early, constant, and thorough excision and burning of all diseased wood. This generally results in saving the tree, and if continued by cultivators, also in the destruction of the causes of the disease.

#### THE PEACH.—VARIETIES.

**Serrate Early York.**—(*Syn.* true early York, early York of Downing, early purple erroneously.) Size medium, roundish-oval, suture slight; dotted with red on greenish-white in the shade, dark red to the sun; flesh very tender and full of juice, rich, with a faint mingling of acid. Quite early, or middle of month of August. Growth rather free for a serrate-leaved peach. Very productive, and from its earliness, of great value. Differs from the large early York by its large flowers, cut leaves, oval fruit, and earlier maturity.

**Large Early York.**—(*Syn.* early York of New Jersey, Honest John.) Large, roundish, inclining to oblate in fully grown specimens, nearly white in the shade, with red dots, and with a deep red cheek to the sun; flesh nearly white, fine-grained, very juicy, with mild, rich, excellent flavor.

**The New York Rareripec**, (a name which has been more or less applied to nearly all the early red peaches sent to New York market,) or Livingston's New York rareripec, is usually regarded as identical with the large early York, but T. Hancock, of Burlington, considers them distinct—the New York rareripec being rather superior, and ripening three days later. Haines' early red closely resembles, if it is not identical with large early York.

**Early Tillotson.**—Size medium; round or nearly globular; thickly dotted with red on a nearly white ground in the shade, dark deep red in the sun; flesh whitish, red at the stone, to which the flesh partially adheres—juicy, rich, high-flavored, more of a nutmeg and less of a vinous flavor than the serrate early York, and ripening about the same time or a few days earlier, or the early part and middle of August. Its time of maturity is often somewhat variable, even on the same tree.

**Bergen's Yellow.**—Very large, round, slightly oblate; suture distinct, passing more than half round; surface deep orange, with a broad deep red cheek; flesh juicy, rich, excellent. Ripens the first of autumn. This is perhaps the finest of all yellow-fleshed peaches. Origin, Long Island, New York.

It differs from the yellow rareripec in its more oblate form, darker color, superior flavor, and later maturity, and in its reniform glands.

**Columbia.**—Large; roundish-oblate; suture distinct, passing half way round; skin rough, rather thick, dull dingy red, with spots of darker red; flesh yellow, rich, juicy, of excellent flavor. Origin, New Jersey. Ripens early in autumn. Shoots, dark reddish purple.

**Brevoort.**—(*Syn.* Brevoort's Morris, Brevoort's Seedling Melter). Medium or large, round and slightly oblate, suture distinct, deep at

apex; skin nearly white or with a faint dingy hue, with a bright-red cheek; flesh rather firm, slightly red at stone, rich, sweet, and high-flavored. First of autumn. Moderately and uniformly productive. Origin, New York.

**Grosse Mignonne.**—Large, roundish, slightly oblate; apex depressed, with a deep suture; skin tinged with greenish-yellow, mottled with red and with a purplish-red cheek; flesh reddened at the stone, juicy, with a very rich, high, and somewhat vinous flavor; stone small, very rough. Early—the last two weeks of summer. Of French origin. The peach usually cultivated in this country under this name, although an excellent variety, is not the genuine grosse mignonne, but differs in its small flowers.

**Early Admirable.**—(*Syn.* admirable; belle de Vitry, *erroneously*). Size medium; nearly round; skin nearly white, with a red cheek; flesh red at the stone, juicy, rich, sweet, fine. Quite early, ripening immediately after serrate early York. French.

**Crawford's Early.**—(*Syn.* early Crawford, Crawford's early melocoton). Very large, oblong-oval, sometimes round-oval; apex with a prominent point; suture shallow; surface yellow, with a red cheek; flesh very juicy, rich, slightly subacid, of good but not the highest flavor. End of summer and beginning of autumn. Productive. Ranks very high in the Northern, Middle and Western states, as a market variety. Origin New Jersey.

**Crawford's Late.**—(*Syn.* Crawford's late melocoton, Crawford's superb melocoton). Very large, roundish, suture shallow, distinct; surface yellow, with a broad, dark-red cheek; flesh red at the stone, rich, juicy, vinous, hardly first-rate. Quite late, or latter part of September. Productive; and ranks among the first as a late variety for market. Origin, New Jersey. The common red-cheeked melocoton is cultivated in some localities under this name.

**Jaques' Rareripe.**—Very large, roundish, slightly oblate, suture distinct, one side slightly larger, surface a little uneven; surface deep-yellow, variously shaded with red; flesh deep-yellow, red at the stone, of good but not of the highest flavor. Shoots diverging. Ripens at the end of summer. Origin, Massachusetts.

**Early Newington Freestone.**—Size medium; roundish, one half always larger, suture distinct; surface nearly white, dotted and streaked with red, the cheek a rich red; flesh white, red at the stone, at first wholly adhering, but as it ripens, partially separating from it; juicy, rich, fine. A valuable early variety, ripening immediately after the serrate early York.

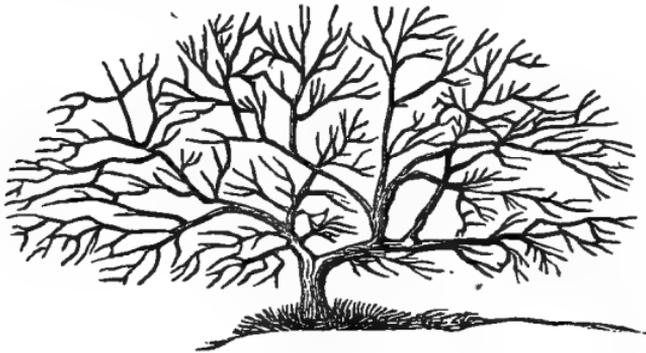
**INSECTS, DISEASES, ETC.—Curl of the Leaf.**—This is produced by a small plant-louse puncturing the leaves on their first growth in the spring, causing them to curl and often to fall off. Though the tree afterward sends out new and fresh leaves, yet the effect is generally to diminish or destroy the fruit for the year, and, in the end, to greatly injure the health of the tree. *Remedy.*—A mixture of tobacco-water and strong soap-suds, applied with a syringe when the leaves are about one-third grown.

**The Yellows.**—This is the most formidable disease which attacks the

peach. It is contagious, and spreads with great rapidity, by the buds, by contact of roots or by the knife used upon diseased trees. It shows itself by the premature ripening of the fruit, which is of small size and of poor flavor, by the leaves turning yellow and falling, ending in the death of the tree. Where the disease has made much progress, the tree should be cut and burned to prevent its extension, as the disease cannot be cured when fully developed. Sickly trees may be revived by the application to the roots of iron-filings or of copperas. Shortening the branches, the application of unleached ashes and iron-filings are the best preventives.

**The Peach-Worm or Borer.**—This insect cuts into the bark but not into the wood, just beneath the surface, causing the gum to exude, and by which its depredations are easily discovered. It can be removed with a knife without difficulty. By piling in the spring about the body of the tree a small quantity of ashes or air-slacked lime, to be removed in the fall, has been found a good remedy. This insect need not be dreaded by careful cultivators. It is easily destroyed if attention be given to it.

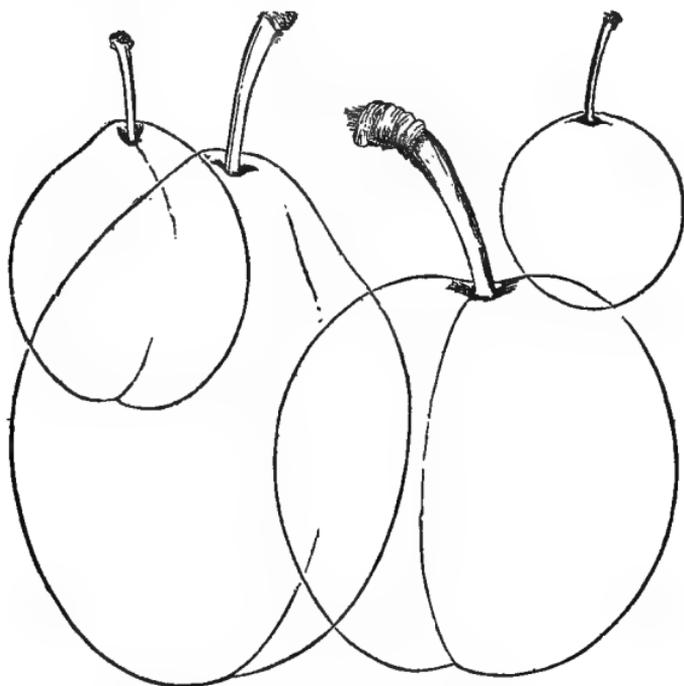
**Pruning.**—Next to the grape, probably no fruit-bearing tree is more benefited by judicious pruning than the peach; yet in none, perhaps, is it more neglected.



The practice is, to plant the trees and let them grow in their own way. The consequence is, that in a few years it runs up to a long, ragged stem, with two or three long, ragged limbs, having some little weak boughs at the tops, and the tree being top-heavy, is, nineteen times in twenty, blown down; and it presents, altogether, a figure by no means handsome in itself or creditable to its owner. That is not the true way. The tree should, in the first place, be budded very near to the ground; after planting cut it down very near to the ground, about one foot six inches from it. Always cut sloping and close to a bud. In this foot and a half there will be various buds, and they will, the first summer, send out many



shoots. Now, when shoots begin to appear, rub them all off but *three*, leaving the top one on each side at suitable distances lower down. These will in time become limbs. The next year top the upright shoots, so as to bring out other horizontal limbs, pointing in different directions from those that came out last year. Thus the tree will become spreading. After this, you must keep down the aspiring shoots; and every winter cut out some of the old wood. See, and contrast the trees represented on the preceding page. By this management the peach-tree lives as long as the apple or any other fruit tree. It is constantly reproducing itself, always in full bearing, always young.



THE PLUM.—VARIETIES.

**Washington.**—(*Syn.* Bolmar, Bolmar's Washington.) Large, often very large, roundish oval, suture obscure, distinct at base; surface yellowish-green, faintly marbled, often with a pale-red blush; stalk one half to three-fourths of an inch long, slightly downy; cavity wide, shallow; flesh rather firm, sweet, mild, moderately rich, free from the pointed stone. Rather early, or the last fortnight of summer. Shoots downy, very vigorous, leaves very large. Origin, New York city. This variety although not high in flavor, is a general favorite for its free growth, great productiveness, beauty, fine texture, and adaptedness to all soils.

**Imperial Gage.**—(*Syn.* Flushing gage, prince's imperial gage, white gage, of Boston.) Fruit rather large, oval, suture distinct; stalk three-fourths of an inch long, slightly hairy, evenly sunk; surface green, slightly tinged yellow, with marbled green stripes; bloom copious, white; flesh greenish, juicy, melting, rich, sometimes adhering, but

usually nearly free from the oval, pointed stone. Ripens first of autumn. Very productive. Shoots are long, upright, vigorous, slightly downy; leaves with a slight shade of blue. Often insipid on heavy soils. A single tree, near Boston, yielded fifty dollars' worth of fruit in one year.

**Jefferson.**—Large, oval, base slightly narrowed, suture slight; greenish-yellow, becoming golden-yellow, often faintly reddened to the sun, bloom thin, white stalk an inch long, sunk little or none; flesh rich yellow, moderately fine-grained, in well-ripened specimens orange, very juicy, nearly free from the long, pointed stone; flavor rich, luscious, excellent. As large as the Washington, and though inferior to the green gage and some others in flavor, it is one of the most valuable of all plums. Ripens in the end of summer. Origin, Albany. Shoots smooth. growth closely resembles Coe's golden drop.

**Green Gage.**—(*Syn.* Reine Claude, Bruyn gage.) Rather small; round; suture faint; surface green, becoming yellowish-green, usually with reddish-brown dots and network at base; stalk half to three-fourths of an inch long, scarcely sunk; flesh pale-green; melting, juicy, exceedingly sweet and rich, and unequalled in flavor. Ripens about the middle of August; shoots smooth.

**Coe's Golden Drop.**—Very large (often more than two inches long), oval, suture distinct, one side more enlarged, necked; light yellow, often dotted red to the sun; stalk three-fourths of an inch long, rather stiff; flesh yellowish, rather firm, rich, sweet, not fine-grained, closely adhering to the pointed stone. Quite late, does not always ripen at the north—requires a long season. An excellent late sort, of English origin. Shoots smooth, rather glossy.

**Purple Gage.**—(*Syn.* Reine Claude Violette, Violet Queen Claude.) Size medium, roundish, slightly flattened at ends, suture distinct, shallow; surface violet, bloom light blue; stalk an inch long, cavity narrow; flesh rather firm, greenish-yellow, rich, sugary, of very high and excellent flavor.

**Purple Favorite.**—Size medium, or rather large, round, obovate; suture obsolete; skin brownish purple; bloom thin, light blue; stalk three-fourths of an inch long, scarcely sunk; flesh pale-greenish, juicy, tender, melting, rich, sweet, excellent, free from the very small, roundish stone. Season about medium, or last week of summer. Shoots nearly smooth, short-jointed, growth slow, much resembling that of the red diaper. Origin, Newburgh, New York.

**Lombard.**—(*Syn.* Bleecker's scarlet.) Size medium, sometimes rather large, round-oval, slightly flattened at ends, suture obscure; skin violet red; stalk very slender, half to three-fourths of an inch long, cavity broad; flesh deep yellow, pleasant, not rich, but of fine quality. Rather early or medium in season, ripening a week or two before the end of summer.

**Royale Hative, or Early Royal.**—(*Syn.* Mirian.) Size medium, roundish, slightly wider at the base; skin light purple, stalk half an inch long, stout, scarcely sunk; flesh amber-yellow, with a rich, high flavor, nearly free from the small, flattened, ovate stone. Very early. Resembles purple gage, but a month earlier. Shoots very downy. French. New. Rare.

**Howell's Early.**—Rather small, oval, slightly angular, suture obsolete; skin light brown, often greenish-yellow in the shade; bloom thin, blue; stalk three-fourths of an inch long, slender, not sunk; flesh amber-colored, juicy, sweet, perfumed, free from the small oval stone. Quite early, ripening a little before the Morocco and early Orleans. Shoots slender, gray, downy. Tree very productive. Newburgh, New York.

**Orleans Early.**—(*Syn.* New Orleans, Hampton Court, Monsieur Hatif.) Size medium, round oval, suture shallow, stalk half an inch long, stout, or longer and slender; cavity moderate; skin reddish-purple, slightly marbled; flesh yellowish-green, rather rich. Quite early.

**DISEASES, INSECTS, ETC.**—**The Black Knot, or Black Gum.**—The remedy for this is to cut away and burn all the affected portions of the bark or wood. When it appears on the bodies or large limbs, all the diseased wood is to be cut away and the wound washed with a solution of copperas or strong brine. Leached wood-ashes and salt liberally applied to plum-trees promote their health and growth.

**The Curculio** is the great enemy of the plum, as of other stone fruits. It commences its work when the fruit is about the size of a pea. It makes a crescent-shaped incision in the fruit, in which it deposits its egg, which soon hatches into a small white larva, which feeds upon and destroys the fruit. The insect falls with the fruit, and enters the ground, from which it emerges the following spring in the form of a beetle. They can fly only during quite warm weather and in the heat of the day. Early in the morning they are nearly torpid; and this is the time to destroy them.

**Remedy.**—The only effectual remedy is to jar them from the tree while in the act of depositing their eggs upon sheets spread beneath the tree. The following from the "Fruit Culturist," is worthy of general attention:

"A quick and sudden jar is important, and may be given by the stroke of a mallet, upon the short stump of one of the smaller limbs, sawed off for this purpose, and which prevents bruising the bark. Or a mallet may be thickly covered with woolen cloth encased in India rubber, to prevent injury to the tree; but the jar is less sudden in this case. David Thomas, (who first proposed jarring down on sheets,) in a communication to the *Genesee Farmer*, in 1832, says: 'Not three days ago, I saw that many of the plums were punctured, and began to suspect that shaking the tree was not sufficient. Under a tree in a remote part of a fruit garden, having spread the sheets, I therefore made the following experiment: on shaking it well, I caught five curculios; on jarring it with the hand, I caught twelve more; and on striking the tree with a stone, eight more dropped on the sheets. I was now convinced that I had been in an error; and calling in the necessary assistance, and using a hammer to jar the tree violently, we caught, in less than an hour, more than two hundred and sixty of these insects.' With large trees, it may be necessary to shake each limb separately, by means of a pole with the woolen and India rubber knob, already described, at its extremity.

"The best time for this work is in the cool of the morning, when the insects are partly torpid with cold, and drop quickly. At mid-day

they retain their hold more tenaciously, and more quickly escape. The work should be commenced very early in the season, as soon as the fruit begins to set, or is not larger than a small pea. With properly stiffened muslin frames, a few minutes are sufficient for many trees, and labor equal in the aggregate to that of a single entire day, may save large and valuable crops."

The confinement of swine or fowls beneath the trees, though not so certain a remedy as the preceding, is often effectual in saving the fruit.

Grafting of the plum should be done quite early in the season, and budding as soon after midsummer as properly matured buds can be had.

#### THE CHERRY.—VARIETIES.

**Rockport Bigarreau.**—Quite large, round heart-shaped; color, when fully ripe, a beautiful clear red, shaded with pale amber, with occasional spots; stalk an inch and a half long, cavity wide; flesh firm, juicy, sweet, rich, with an excellent flavor. Season rather early. Tree upright, vigorous. Origin, Cleveland, Ohio; one of the best of Dr. Kirtland's new seedlings.

**Bigarreau or Grafton.**—(*Syn.* yellow Spanish, white bigarreau of Massachusetts.)—Very large, often an inch in diameter, obtuse heart-shaped, very smooth, regular, base flattened; surface clear, pale waxen yellow, with a handsome light-red cheek to the sun; stalk an inch and three-fourths long, cavity very wide, shallow; flesh firm, with a fine, rich flavor. Season medium, or last of June. Shoots stout, diverging or spreading. This variety, although not of the highest flavor, has become, from its great size, beauty, and productiveness, a general favorite.

The late bigarreau, which originated with Dr. Kirtland, of Cleveland, resembles this, but is slightly less in size, deeper red, and ripens about ten days later.

**Cleveland Bigarreau.**—Very large, round heart-shaped, suture broad and deep half way round; color bright, clear, delicate red, or amber yellow; stalk an inch and a half long, curved; flesh firm, juicy, sweet, very rich. Season early, or with black Tartarian. Resembles the grafton, but ten days earlier. Origin, Cleveland, Ohio. New.

**Elton.**—Large, pointed, heart-shaped, somewhat oblong, pale yellow blotched, and shaded with red; stalk two inches long, slender; flesh firm, becoming rather tender, rich, high-flavored, excellent. Season medium, or rather early. Growth spreading, rather bending; petioles reddish-purple. A cross between the grafton and white-heart. One of the finest of cherries. English. Rather tender in very severe climates.

**Downton.**—Large, round heart-shaped, apex quite obtuse, or slightly indented; light cream-color, stained with red; stalk an inch and three-fourths or two inches long, slender; cavity wide; flesh yellowish, tender, adhering slightly to the stone, rich, delicious. Season medium, or rather late. Growth rather spreading.

**Black Tartarian.**—(*Syn.* Frazer's black Tartarian, black Circassian, black Russian, Ronald's large black-heart, Ronald's heart.) Quite large,

(often an inch in diameter), on crowded old trees only medium; heart-shaped, often rather obtuse, surface slightly uneven, nearly or quite black; stalk an inch and a half long, slightly sunk; flesh dark, half tender, with a peculiar liver-like consistency, rich, nearly destitute of acid, of very fine, but not of the highest, flavor. Ripens early, or about the middle of June. Shoots very erect. The vigorous growth and great productiveness of the tree, and the large size and mild, sweet flavor of the fruit, render this variety a general favorite.

**Knight's Early Black.**—Large, obtuse, heart-shaped, surface slightly uneven, black; stalk an inch and a fourth or an inch and a half long, rather stout, cavity deep, narrow; flesh dark purplish-crimson, tender, juicy, with a very rich, high, excellent flavor. Ripens quite early, or a little before the black Tartarian. Shoots diverging or spreading. Much resembles the black eagle, but larger, earlier, more heart-shaped, and with a much deeper cavity. English. In some localities, it appears to need a rich soil and warm situation to develop its excellence.

**Mayduke.**—Large, roundish, obtuse heart-shaped; color red at first, becoming, when mature, nearly black; flesh reddish, becoming dark purple, very juicy, and melting, rich, acid, excellent. It is frequently picked, when red, immature and not fully grown, and imperfect in flavor. Quite early—but often varying greatly and permanently in its season of ripening, even on the same tree. Holman's duke and late Mayduke are only late variations perpetuated by grafting. Growth upright for a duke. Very hardy, and adapted to all localities.

**Royal Duke.**—(*Syn.* royal tardive.) Very large, roundish, distinctly oblate, surface dark-red; flesh reddish, tender, juicy, rich; season rather late. Growth like the Mayduke. Rare.

**Plumstone Morello.**—Large, roundish heart-shaped; color deep red; stalk an inch and a half long, slender, straight; cavity moderate; flesh reddish, of a rich acid flavor. Very late, or after midsummer. Stone rather long and pointed. The most valuable of the Morellos.

**INSECTS, DISEASES, ETC.**—The *Cureulio*, *Caterpillar*, and *Aphis*, which have already been described, and the modes of their destruction pointed out, also attack the cherry. The cherry-slug sometimes does much injury by eating the leaves. They may be repelled by dusting the leaves regularly with ashes when wet with dew.

**Grafting**, to succeed, must be done very early in the spring, before any swelling of the buds. Budding about midsummer, and just as the terminal buds begin to form.

#### APRICOTS—VARIETIES.

**Moorpark.**—(*Syn.* Anson's, Dunmore's Breda, Temple's.) Large, (two inches in diameter,) nearly round, slightly compressed; surface orange, with a deep orange-red cheek, and with numerous darker dots; flesh free from the stone, bright yellowish orange, rather firm, quite juicy, with a rich, high flavor. Stone perforate, or with a hole lengthwise under one edge, so that a pin may be thrust through. Season medium, or two weeks after midsummer. Requires the shortening-in pruning recommended for the peach. English. Old.

**Breda.**—(*Syn.* Holland, Amande Aveline.) Rather small, sometimes

nearly medium, (an inch and a half diameter,) roundish, obscurely four-sided, suture distinct; surface orange, with a dark reddish orange cheek; flesh deep orange, free from the stone, rich and high-flavored. Quite early, or a week or two after midsummer. Hardy for an apricot, and very productive.

**Peach.**—(*Syn.* Anson's imperial, Pêche, De Nancy.) Very large, slightly larger than Moorpark; yellowish orange, with a brownish orange cheek, and mottled with dark brown to the sun; flesh a rich yellow, juicy, with a rich, high flavor. Stone perforate. Ripens about the time of the Moorpark, which it closely resembles, but is of larger size. Origin, Piedmont.

**Large Early.**—Size medium; oblong, compressed; suture deep; slightly downy; pale orange, with a spotted bright orange cheek, very handsome; flesh free from the stone, pale orange, rich, juicy. Ripens at or a little before midsummer. Origin, south of France.

**Culture,** the same as the peach.

**INSECTS.**—The mode of protection is the same as that for the plum. The tree should be planted not on the south or east side of buildings, but on the west or north, as they are less liable in the latter positions to be destroyed by spring frosts, and when their blossoming is being retarded by their position, they are less liable to the attacks of the curculio. The apricot is a hardy tree comparatively, that is, it is more hardy than many of our early peaches, and, if care be taken in the way suggested, to protect the fruit from destruction by frost and the curculio, large crops of this delicious midsummer fruit may be obtained.

**Budding** is best done on plum stocks and on light soils; those of the wild plum should be chosen.

#### THE NECTARINE.—VARIETIES.

The nectarine resembles though it is inferior to the peach. Its fruit is more subject to destruction from the ravages of the curculio—being in that respect similar to the apricot. Its mode of cultivation, soil, etc., are the same as those for the peach.

**Early Violet.**—(*Syn.* violet hative, aromatic, new scarlet, large scarlet, early brugnon, violet musk, violette musquée.) Size medium; roundish, apex slightly narrowed, suture shallow; skin with a dark purple red cheek and brown dots, on pale yellowish-green; flesh whitish, much reddened at the stone; stone roundish, moderately rough, reddish or reddish brown; flesh melting, rich, high-flavored, and aromatic; of the finest quality. Season medium or end of summer. Distinguished from Elruge by its redder flesh and stone, and darker skin.

**The Large Early Violet, or Violette Grosse,** differs in its larger size and rather inferior flavor.

**Elruge.**—Medium in size, roundish-oval; suture slight, distinct at apex; skin a dark red, or deep violet on a greenish-yellow ground, with minute brownish dots; flesh greenish-white, slightly, sometimes scarcely stained with pale red at the stone; juicy, rich, high-flavored; stone rough, pale. Season about medium, or first of autumn. This is one of the best and most celebrated of nectarines.

**New White.**—Rather large, nearly round; skin white, often a slight

tinge of red; flesh white, tender, juicy, rich, vinous; stone small. Season medium or first of autumn. English.

**Downton.**—Medium in size, roundish-oval, pale green, with a deep violet-red cheek; flesh pale green, slightly red at the stone; melting, rich, excellent. Ripens end of summer. This is perhaps the best flavored of all the nectarines. English.

**Hunt's Tawny.**—Nearly medium size, roundish-ovate, narrowed and pointed at apex, one side slightly enlarged; skin, a dark-red cheek on pale orange, with numerous russet specks; flesh deep orange, rich, juicy, good. English. Valuable for its early maturity, ripening quite early, or three weeks before the close of summer. Often mildews badly.

**Early Newington.**—(*Syn.* black, early black, Lucombe's seedling.) Large, roundish-ovate, one side slightly enlarged, apex pointed; skin pale green, nearly covered with bright red and with darker marblings and dots; flesh greenish-white, deep red at the stone, juicy, with a fine rich flavor. First of autumn.

Its enemies, diseases, etc., are the same as those of the peach, which see.

**PACKING APPLES FOR SHIPPING.**—Messrs. Chas. R. Huntington & Co., New York, give the following directions for packing and shipping green apples:

“Green Apples, if designed for shipment to New York or any other market, should be carefully picked by hand from the trees, in baskets which will contain about half a bushel, and always handled with great care, studiously avoiding the slightest bruise.

“Good strong barrels, that will hold two and a half bushels, should be made expressly and brought into the orchard, which is the place above all others most desirable for packing. Let each barrel be packed under the supervision of a faithful, practical man, in the following manner: *First, put in a layer of smooth, uniform-sized fruit, regularly laid in tiers upon the head that is to be branded or opened in market*, proceed to fill the barrel, with the baskets small enough to be admitted into the barrel, and empty, (this is to avoid the certain bruises caused by filling from the top.) Shake the barrel frequently, and when full arrange the apples so that the head will rest upon them smoothly, and in order to secure them from shucking in the barrel. It is necessary to have it so well filled as to require hard pressing to get the head into the crozen.

“A cheap and economical press may be arranged thus—secure to a tree, or post, a loop, either rope or leather, at the right point to receive one end of a hickory pole ten or fifteen feet in length, and let it rest upon three or four pieces of plank laid across the head, one upon the other, cut about the length of the head, and thick enough to give the right purchase to the lever or spring-pole. In this manner apples (or potatoes) may be packed so as to stand railroad or any other transportation, and being in prime order will always command a quick sale at good prices. They should be assorted, and all wind-fall, wormy, small knurly, and poor common fruit rejected.”

**HARDY FRUITS AT THE WEST.**—The late unusually severe winters at the West have enabled the residents to discover the hardy varieties of fruit, as those which have escaped unscathed may with safety be so classed. The following list, made up from intelligent correspondents of the *Annual Register*, may be relied on for endurance in future years.

**Apples.**—I. C. ALLEN, of Lena, Ill., furnishes the following results of his experience: *Very hardy*—Oldenburgh, late strawberry. *Hardy*—Early Joe, early Pennock, sops-of-wine, Cooper, Fulton, fall orange, mother, Fallawater, Hubbardston. nonesuch, Jonathan, limber-twig. *Tender*—early harvest, summer bell-flower, Belmont, Hawley, Jersey sweeting, Rambo, twenty-ounce, Baldwin, Dominie, English russet, King, Newtown pippin, golden sweet.

E. ORDWAY, of Freeport, Ill., gives the following list of such varieties as have withstood the late severe winters there: Tallman sweeting, yellow bell-flower, seek-no-further, golden russet, Northern spy, white winter pearmain, wine-sap, Fallawater, maiden's blush, red Canada, sops-of-wine, and large and small Romanite.

SAMUEL EDWARDS, La Moille, Ill., gives the following as the most hardy and valuable: red June, high-top sweeting, hocking, early Pennock, Keswick codlin, maiden's blush, fameuse, Westfield seek-no-further, yellow bell-flower, white winter pearmain, Fulton, red Romanite.

DR. S. L. PENNINGTON, Sterling, Ill. *Hardy*, or but slightly injured—yellow bell-flower, Westfield seek-no-further, fameuse, black Detroit, wine-sap, pomme grise, Lowell, red June, willow-twig, early nonpareil. *Tender*—Baldwin, Porter, Rhode Island greening, Roxbury russet, Ortle, sweet-bough, Rambo.

E. H. SKINNER, McHenry Co., Ill. For *summer*—Red Astrachan and Carolina red June. For *autumn*—Porter. *Early winter*—fameuse. *Winter and spring*—Jonathan, Rawles' Janet, English russet.

J. S. SHERMAN, Rockford, Ill. Sweet June, Baldwin, Tompkin's County King, Wagener, and most of the hardiest in Western New York, except Rhode Island greening, and sweet-bough. Maiden's blush and yellow bell-flower succeed admirably.

B. W. STEERE, of Adrian, Mich., mentions as particularly *tender*, English and Roxbury russets, Gravenstein, Baldwin, and Rhode Island greening—the latter becomes hardier with age, but is an uncertain bearer.

AMASA STEWART, of Le Seur, Minnesota. Early harvest, early strawberry, red Astrachan, maiden's blush, fameuse, Harrison, white bell-flower. The Rambo was tender.

F. K. PHOENIX, Bloomington, Ill., who has also made extensive observations in Wisconsin, names the following hardy apples: *Summer*—Carolina June, sweet June, red Astrachan, sops of-wine, Benoni, summer pearmain. *Autumn*—autumn strawberry, Dyer, fall orange, Haskell sweet, Gabriel, Northern sweet, Oldenburgh, St. Lawrence. *Winter*—yellow bell-flower, Carthouse, limber-twig, Romanstem, white winter pearmain, seek-no-further, Tallman sweet, wine-sap, monstrous pippin, English golden russet, willow-twig, winter sweet paradise, Campfield sweet.

OHIO POMOLOGICAL SOCIETY, 1857, from the report of various members: Carolina red June, fine in Central Indiana, poor in southern

Michigan; late strawberry, good in Ohio, Indiana, and Illinois; American summer pearmain, generally and highly esteemed; Hawley, promising well; maiden's blush, everywhere hardy and productive; Fallwater, second quality, but everywhere valuable; white pippin, one of the best for central and southern Ohio; white winter pearmain, highly prized in Indiana and Illinois, unknown in Ohio; Pryor's red and Rome beauty, southern Ohio; red Canada, northern Ohio. The following sorts have generally done well: Winter sweet paradise, Broadwell, Tallman sweet, Danver's sweet. The Northern spy had done well in Kentucky, St. Louis, and Indiana, although diminished in keeping qualities.

In addition to the preceding lists, the following has been furnished by M. R. PATRICK, of Sackett's Harbor, N. Y., a place remarkable for its intense winters and severe winds. *Vigorous growers and perfectly hardy*—Hawthornden, sops-of-wine, late strawberry, Jewett's red, Orne's early. *Nearly as hardy*—Early harvest, summer queen, fall orange, Hawley, King (Tompkin's), American golden russet, Swaar, Benohi, red Astrachan, Ribston pippin. *Somewhat tender*—Rambo, Dyer, Gravenstein, fameuse. *Half hardy*—Jonathan, Dominic, sweet Baldwin, Danver's sweet, Belmont, Canada Reinette, yellow bell-flower. *Tender*—Baldwin, twenty-ounce, Tallman sweet, fall pippin, sweet-bough, summer rose, early strawberry, early Joe, Jersey sweet, Oldenburgh, Roxbury russet (very poor), Westfield seek-no-further, ladies' sweet, Esopus Spitzenburgh, Porter, Lowell, lady apple, Newtown pippin, English russet, Northern spy, red Canada, Rhode Island greening, Peck's pleasant.

From the preceding lists it will be seen that the following have proved hardy wherever tried, without exception, viz.: sops-of-wine, late strawberry, white winter pearmain, wine-sap, fall orange, Fallwater, maiden's blush, Carolina June, and red Astrachan.

**Pears.**—B. W. STEERE, Adrian, Mich., gives the following list: *Tender*—Bartlett, Seckel, Winkfield, Oswego beurre. *Hardy*—Flemish beauty, Tyson, Rostiezer, Doyenné d'été, beurre d'Anjou, belle lucrative, Onondaga, and Lawrence.

The OHIO POMOLOGICAL SOCIETY, in its transactions for 1857, gives from the report of some of its members the following pears as having proved valuable at Cincinnati: Walker, Fontenay, Jalousie, Andrews, Gray Doyenné, Urbaniste, belle lucrative, Flemish beauty, Kirtland, Doyenné Sieulle.

I. C. ALLEN, of Lena, Stephenson Co., Ill., furnishes the following list of pears, the results of his experience in that region. *Very hardy*—Flemish beauty. *Hardy*—Stevens' Genesee, Susette de Bavay. *Half hardy*—Doyenné d'été, white Doyenné, Easter beurré, Glout Morceau, Bilboa, Henry IV., Seckel, Tyson, Bergamotte Cadette, Aremberg. *Tender*—Bartlett, belle lucrative, beurre d'Anjou, Beurre Bosc, Catillac, Chaumontelle, Dearborn's seedling, Angoulême, Louise Bonne of Jersey, Madeleine, Vicar of Wakefield, Van Mons' Leon le Clerc.

**Cherries.**—The dukes and Morello cherries, such as early Richmond, Mayduke, belle magnifique, belle de Choisy, Morello, etc., all succeed well at the West, while the heart and bigarreau varieties generally fail.

**Small Fruits.**—Currants, Houghton's gooseberry, and the smaller fruits generally, succeed well throughout the West.

## THE FLOWER-GARDEN.

**FOR WHOM PREPARED.**—What we shall say of the selection and culture of flowering plants and shrubs, will be adapted to beginners, rather than amateurs, to the open growing—not the green-house—for there are ten thousand gardens, where flowers may and should be cultivated, to one green-house; and there are ten thousand who need the elements of the art to one who would be benefited by its higher instructions. The work, therefore, will be practical rather than scientific, plain, rather than classical.

**BEST KIND OF SOIL.**—For a flower-garden, a light, mellow soil is by far the most preferable; the mould of the beds and borders should be sifted, and raked nearly level, or with a gradual slope. The most modern flower-gardens are those which are made out of a lawn, or grass-plot; but where this is not already in existence, turf may be laid, after the beds are formed. It is essential that the lawn or grass-walks should be frequently trimmed, and more frequently rolled, to prevent the grass from running to seed, and overrunning the flower-beds, and to keep down the worms, and give it a neat, regular, carpet-like appearance. The beds intended for the more tender flowers, should be protected from the cold, cutting winds, by hedges or plantations of shrubs, and the whole intersected, here and there, with winding gravel walks. The practice formerly adopted, of dividing the flower-garden into a number of small beds, and surrounding each with a path or gravel-walk, is now laid aside by those whose taste is considered the most correct; or, at least, is confined to very small plots of ground.

A flower-garden should be so situated, as to form an ornamental appendage to the house; and, where circumstances will admit, placed before windows exposed to a southern or south eastern aspect. The principle on which it is laid out, ought to be that of exhibiting a variety of color and form so blended as to present one beautiful whole. In a small flower-garden, viewed from the windows of a house, this effect is best produced by borders laid sideways to each other, and to the windows from which they are seen; as by that position the colors show themselves in one mass; whereas, if placed endways to the windows of the house, they divide the whole in appearance, and occasion a scarcity of show.

Without great neatness in the treatment of the spot devoted to flowers, much of the pleasing effect which otherwise would be produced on the mind is counteracted. Neatness consists in something more than the mere weeding and raking of beds and borders, hoeing and sweeping of alleys. It is perceptible even in the mode of tying up, trimming and training plants—even in the style of suspending a collar or label round the neck of a carnation.

A little attention to these matters, at the beginning, induces a habit of doing even the minutest things in the flower-garden with good taste, and of avoiding any arrangement that may be unsightly.

**THE SHRUBBERY.**—Shrubs follow so closely in order after flowers, that we cannot refuse their assimilation in our pages; indeed, so many of

them are embellished with flowers, and many of them, too, at a season when our flowers have lost their loveliest charms, that they have a double claim on our regard; some of them are also so hardy, as to brave our severest winters, and bloom even amid our more chilling days. Summer's loveliest gem—the virgin rose—belongs also to this tribe of plants; the myrtle, with its delicate petals; the clematis, with its climbing tendrils and odoriferous sweets; the lilac, with its ornamental coronals, and numerous other favorites of Flora, exhibit claims to our admiration.

The distinction, therefore, between flowers and shrubs is merely that the former are of the herbaceous kind, that is, their stalks are generally soft and succulent, and require, comparatively, but little watering, themselves imbibing a considerable share of moisture from the atmosphere; while the latter are harder and firmer in the stalks, approaching nearer to the nature of trees, except in having shorter stems and more bushy heads.

Shrubs are all perennials, and are divided into two kinds, deciduous and evergreens; the former lose their leaves in the winter, and do not regain them till the following spring; the latter only shed them when new leaves are ready to appear.

Deciduous shrubs are divided into flowering and ornamental kinds. They grow from one to ten or twelve feet high; and some sorts, in favorable situations, attain a much greater height: the creeper kinds, if properly trained, will reach to fifty or even a hundred feet. They may be raised from seeds, sown in the spring months, and planted out in the autumn; and propagated by suckers, cuttings, or layers. They require mostly a good rich loamy soil; and many of the flowering and more tender kinds should be protected in a greenhouse from the inclemency of the wintry season.

The evergreen kinds of shrubs are also divided into flowering and ornamental; and are, like the deciduous, raised principally from seed, and propagated by slips, cuttings, suckers, and layers. They attain a similar height: and the parasitical kinds, as they are termed from living principally on the nourishment they derive from clinging to trees, as the ivy tribe, grow as high as the creepers among the deciduous shrubs. They will thrive in almost any kind of soil, and being particularly hardy, vegetate amid the severity of winter as in the genial warmth of summer; but the American evergreens, of which we have now many elegant flowering varieties, thrive only in peat or boggy earth.

When shrubs are planted for hedges, they, in their first growth, should be timely trimmed and trained, and kept free from weeds, the sides cut even, and the tops sparingly touched, till nearly at the required height, except that the weak and runaway tops should be nearly leveled with the rest, that the whole may advance with regularity.

The beds and borders of a flower-garden should, in no part of them, be broader than the cultivator can reach to from each side, without treading on the beds; the shape and number of them must be determined by the size of the grounds and taste of the person laying out the garden; only, as a sort of general rule, do not allow less than three times as much grass-plot as flower-bed, exclusive of the gravel-walks, which ought not to be very numerous.

Although the grandest display is produced by a general flower-gar-

den, that is, by cultivating such a variety of sorts in one bed or border, as may nearly insure a constant blooming; yet bulbous plants, while essential to the perfection of the flower-garden, lose much of their peculiar beauty, when not cultivated by themselves. The extensive variety of bulbous roots furnish means for the formation of a garden, the beauty of which, arising from an intermixture of every variety of form and color, would well repay the trouble of cultivation; particularly as, by a judicious selection and management, a succession of bloom may be realized throughout the summer months.

As, however, bulbous flowers lose their richest tints about the time that annuals begin to display their beauties, there can be no well-founded objection why the latter may not be transplanted into the bulbous beds, so that the opening blossoms of the annuals may fill the place of those just withered, and continue to supply the flower-beds with all their gaiety and splendor.

**THE CLASSES OF FLOWERS AND SHRUBS.**—Flowers are divided into *annuals, biennials, perennials, bulbous, tuberous, and herbaceous.*

**Annuals** are plants that live only one summer.

**Biennials** are plants that do not produce their flowers until the second year, and then die after they have ripened their seeds. Some, however, are included in this class that live three or four years, as the hollyhocks, snap-dragons, Canterbury bells, etc.

**Perennial Plants** are those permanent plants which are not woody, but which generally die down to the ground every year and spring up again the year following; There are some, however, which are called evergreen perennials, which never die down to the ground, such as pinks, carnations, several kinds of saxifrage, etc. Perennials have the great advantage over annuals and biennials, that they do not require renewal from seed, but are propagated by division of the root or division of the plant.

**Bulbous Plants** are perennials, and they are propagated by separating the offsets, which may be considered as a kind of division of the root. Bulbs enjoy the advantage of being more independent of a fixed residence in the soil than many other plants. During their period of rest, they may be kept out of the ground, be made the subject of merchandise, and be transported to very considerable distances. Meanwhile their vitality is still in full force, and important changes, such as the formation of the future blossom, is going on within them. In due time, they again require the nutriment supplied by the rains and the earth; just as an animal that has lain torpid all winter, seeks his food on awakening in the spring. The capability of propagation by offsets is another point of interest belonging to bulbs. Young progeny, exactly resembling the parent plant, are thus produced with certainty. Bulbs often are the subjects of the first attempts at horticulture by juvenile gardeners; and are occasionally the only means by which city residents can gratify their taste for growing flowers. By far the great majority of bulbs produce exceedingly handsome blossoms, often odoriferous and even highly scented.

**Tuberous-rooted Plants.**—Tuberous-rooted plants are propagated by separating the tubers; and when these tubers are furnished with eyes like the potato, they may be cut into pieces, preserving an eye to each;

but when they are without eyes or buds excepting at their upper extremity, as in the case of the dahlia and the garden ranunculus, each tuber must be separated from the parent plant entire with its bud. A perfect bulb has a single leading germ; a tuber has several.

**Herbaceous Plants.**—The great majority of plants which ornament the miscellaneous borders of a flower-garden are herbaceous perennials, including under this term bulbs and tubers.

Plants are called herbaceous when, although their existence may endure for a term of years, the stems which support their leaves and flowers, instead of mounting permanently like those of shrubs and trees, die down to the root, or to the tuft of leaves which crowns the root, every winter, to send up fresh stems (if they are not stemless, as is the case with many herbaceous plants) the following spring.

**HARDY ANNUALS.**—**Fall Sowing.**—Hardy annuals may be sown in September, and, if lightly covered with litter, the plants will survive the winter. Transplanted in early spring, they come early into bloom.

The following may be thus sown: sweet alyssum, coreopsis, or callopsis, China aster in varieties, catch-fly, chrysanthemum in varieties, evening primrose, larkspur in varieties, pansy, or heart's-ease, poppy in varieties, rocket larkspur.

**How to Sow.**—When the seeds of annuals are sown, the ground should first be made firm by pressing it with the saucer of a flower-pot, or the back of the spade; the seeds should then be sprinkled thinly over the ground, and just covered with fine earth, which should be slightly pressed down over them. When they come up, if they appear too thick, they should be thinned out so as to leave each plant standing apart; the distance at which they are left from each other varying, of course, according to the strength and habit of growth of the plant.

Snails and slugs are dangerous enemies to young and tender annuals, and care should be taken to search for them early in the morning and late in the evening; or to destroy them by watering the ground with lime-water, so weak as not to disfigure the plants.

**Cultivation.**—So much has been heretofore said in this work on cultivation in general, and on the saving and planting of seeds, that we need not here repeat what we have before said, as the principles applicable to planting in general apply equally to flowering plants and shrubs. Nor shall we give the lists of flowers—legion in number—which fill our floral books, and which confuse and distract the unpracticed cultivator. We choose rather to present a choice and select list of hardy plants and shrubs—such a list as will neatly and elegantly adorn the homes either of the opulent or the humble, and continue in bloom from May to November. This list will be made up from the works of Delamar, Cobbett, Loudon, Bridgeman, and others; and instead of following the classes or divisions of plants as named heretofore, we prefer, for convenience of reference, to arrange it in alphabetic order.

#### SELECT LIST OF FLOWERING PLANTS AND SHRUBS.

**Adlumia.**—A graceful climber. If the seeds are sown in the common border, near a trellis or arbor, in May, the plants will flower finely, without any further care the following season.

**Anemone.**—This is a very beautiful flower, and worthy of great pains. It is raised from seed, or from pieces of the roots. Sow the seed in spring. The plant does not blow the first year. The root, which is tuberous, is taken up in the fall, dried in the sun, and put by in the dry till spring, when it is put into the ground again. And, during the summer, it sends out young roots, which must be taken off and planted out to become flowers. There is a great variety of colors and of sizes of this flower.

**Adonis.**—Herbaceous plants with showy flowers, natives of Europe, of easy culture in any common soil. The most ornamental species are *A. vernalis*, the spring-flowering Adonis, a perennial with bright yellow flowers, which is quite hardy, and is easily increased by division of the root; and *A. autumnalis*, the common annual *flos Adonis*, or pheasant's eye, with dark crimson flowers. All the species will grow in any common garden soil; and the annual kinds should be sown in autumn, as they will stand the winter in the open air—or early in spring, as they are a long time before they come up. The seeds will keep good several years.

**Althea Frutex.**—It is raised from seed, or from suckers. There are several sorts, as to colors. They should be mixed to make a variety. Save the seed in November or December. The pods are full. Sow in the spring. Seed produces the handsomest shrub; and it is to be got almost anywhere.

**Auricula.**—This plant may be raised from seed, but the flowers in such cases are generally unlike their originals. The auricula is also propagated by division of the root, or by cutting off slips which have generally some roots attached, and are put at once into small pots. The season for performing the operation is shortly after the flowers have gone off, or, if they are left on, immediately after the seed has ripened.

**Arbutus.**—A pretty evergreen, well known and easily obtainable.

**Aster, China.**—An annual, bears great quantities of seeds and is sown early in the spring. There is a great variety of colors, and profusion of blossoms. It yields no odor, but a clump of it is very beautiful.

**Azalia.**—That little American honey-suckle that impedes our steps when shooting on the skirts of woods. It however, blows profusely, though it has no smell like the English honey-suckle.

**Balsam** is an annual and a most beautiful plant, with great abundance of flowers. Sow when you sow melons, at a distance of four feet; leave only one plant in a place; let the ground be rich and kept clean; it will blow early in July, and will keep growing and blowing till the frost comes, and then, like the cucumber, it is instantly cut down. I have seen balsams in Pennsylvania three feet high, with side-branches two feet long, and with a stem much bigger than my wrist, loaded with beautiful blossoms. Plant, branch, leaf, flower; all are most elegantly formed, and the colors of the flowers extraordinarily vivid and various. There are, however, some more double than others, and some variegated. The seed of these should be sowed, and it comes in great abundance. The flower of the balsam has no smell.

**Briar, Sweet.**—A well known shrub of the rose kind. Rows of it carefully planted and pruned make very good hedges, and it will grow in almost any ground, though fastest in good ground.

**Boronia.**—*Rutaceæ*.—Evergreen New Holland shrubs, which flower during the greater part of the summer, and which are all very ornamental. *B. serrulata* is a most desirable species, forming a neat compact plant for a room, or green-house, and requiring plenty of light and air, but very little heat. It, and all the other species, will grow freely in sandy peat, well drained, and they may be propagated by layers or cuttings of the young wood in sand, under a bell-glass, taking care to wipe the glass frequently, so as to keep the cuttings free from damp.

**Bell-Flower, Hare-Bell.**—The Canterbury bell, *C. medium*, is the Virgin's violet, or *Viola Mariana* of the sixteenth century, whence it has been falsely styled the marine violet. A large genus, not nice about soil, of easy culture and propagation, and valuable as affording abundance of blue flowers. Perhaps the most remarkable, *C. pyramidalis*, sends up a flower-stem six feet high or more, covered with blue blossoms from top to bottom. Many of the hardy perennials are dwarf plants, which produce a profusion of flowers, more conspicuous than the leaves. Some of the prettiest little species for pots, or rockwork, are *C. cenisia*, and *C. uniflora*, which do not exceed three inches in height, and are covered during June or July with blue flowers; *C. carpathica*, *C. rotundifolia*, *C. garganica*, and upwards of fifty others, which do not exceed six inches in height. All these are very valuable for forming beds in a geometric or regularly-shaped flower-garden, from their dwarf and compact habit of growth, and from the great profusion of their leaves and brilliant-looking flowers. *C. medium*, the Canterbury bell, is one of the most ornamental of biennials; and *C. speculum*, Venus's looking-glass, is a well-known and pretty annual.

**Basella.**—*Chenopodiææ*.—*B. tuberosa*, the Madeira vine, is a beautiful climbing plant recently introduced, which, from the elegance of its glossy foliage, and its numerous fragrant white flowers, has already become quite a favorite. It grows with the greatest ease in any soil, but in a rich loam, it will grow forty feet in a single season—and is therefore an admirable plant for covering an arbor or screen where immediate effect is desired. The roots are tuberous, with numerous eyes or buds somewhat resembling the potato, and may be kept through the winter in a warm cellar in the same manner.

**Clematis.**—*Ranunculaceæ*.—Half-hardy and hardy climbers; shrubby and herbaceous; with white and purple flowers. They are all most desirable plants, of the easiest culture in any light rich soil; and readily propagated by cuttings of the young wood, or seeds, which are frequently ripened plentifully. *C. florida*, with white flowers; *sieboldii* or *bicolor*, with white and purple flowers, and *C. azurea* or *cærulea*, with beautiful violet blue flowers, are among the handsomest of conservatory climbers; and under glass, they frequently come into blossom early in March. In the open air, they do not flower till May or June. *C. azurea* is as hardy as the common wild kinds; but the others are sometimes killed to the ground by frost. *C. viticella*, and its varieties, *C. flammula*, *C. Hendersonii*, and *C. cylindrica*, are all quite hardy, and form

most beautiful objects when trained over lattice-work, or baskets in the flower-garden; and no garden, however small, ought to be without one or more of these species.

**Carnation.**—Here are beauty and fragrance, and both in the highest degree. There are various sorts, distinguished, like those of the auricula, by names; and what is said of the seed of the auricula applies here. If sown, the carnation does not blow till the second year. It is usually propagated by layers. While it is blowing, it sends out several side-shoots near the ground. These are pinned down in August to the earth with a little stick with a hook at the end of it. A little cut, or tongue, is made on the under side of the shoot; and thus the head of the shoot is brought upright. The part that touches the ground is well covered with earth; and roots come out here before the fall. Then the stalk, which connects the young plant with the old one, is cut off; the young plant is transplanted, and the next year it blows. The old root does not stand another year well; and therefore its branches are thus made use of to keep up the race and the sort. Carnations are rather tender as to frost. They must be well covered in this country to live through the winter. It is best to put them in large pots to give room for laying, and to keep them in a green-house in winter, or in some house where they can have sun and air. However, they merit all the pains that can be bestowed upon them.

**Clove** is only a more handy and less esteemed sort of carnation, which see. It may be propagated like the carnation, or by cuttings, which is the easier way. Instead of laying down the side shoots, you cut them off. Then you cut away the hard part of the shoot, strip off three or four of the bottom leaves. Tip the rest of the leaves; make a little split in the butt of the shoot, and then, with a little smooth pointed stick, plant the cutting in the ground. This is to be done early in August. The young cloves will have roots in the fall; and you may transplant them into the open ground or into pots to blow the next year. The old clove-plant will, however, blow for many years. I should think that, with good covering, such as directed for spinach, cloves would live out the winter in this country.

**Columbine.**—A perennial. Very common, but very pretty.

**Cowslip.**—This is one of the four flowers without which English pastoral poetry would be destitute of that which awakens the most delightful ideas. The cowslip, the primrose, the violet, and the daisy, are of endless recurrence in that species of writing. They all come early in the spring; and are all beautiful. Neither of them is seen here, and they all might; for they will bear any severity of weather. The cowslip is of the *Polyanthus* tribe. It is of a delicate yellow color, and sends forth many blossoms from the same stem, which rises about six inches from the ground. It may easily be propagated from seed, which it bears in great abundance; but, when you once have a plant, the easiest way is to propagate from offsets. The plants raised from seed do not blow till the second year.

**Catalpa.**—Has fine leaves and splendid flowers. It will grow in any common soil that is tolerably dry; but if it has too much moisture, the shoots, which are naturally soft, with a large pith, will never be thorough-

ly ripened. For the same reason, the situation ought to be airy. It is propagated by seeds or cuttings of the roots.

**Crocus.**—The welcome harbinger of returning sunshine and cheerfulness; although one species, *C. sativus*, or saffron, flowers in the autumn, and is cultivated for culinary and medicinal purposes rather than as a garden plant. The genus is large; a few species only are desirable for the parterre, the Alpine crocuses having mostly insignificant flowers, although interesting in other respects. The yellow crocus, *C. luteus*, is a general favorite; but requires a bright sunny day for its perfect expansion. The cloth-of-gold, *C. Susianus*, which has been put forward to rival it, is far inferior.

In whatever way the crocus may be planted, the leaves should never be cut off till they begin to wither, as, without their assistance, the plant cannot accumulate matter to form its new bulb for the ensuing season. The new bulb always forms above the old one; so that in four or five years they will have almost pushed themselves out of the ground; and from this habit of growth, crocuses are generally planted three or four inches deep.

**Cercis.**—*The Judas tree.*—Few trees are more ornamental in a shrubbery than the two species of this genus; but *Cercis Siliquastrum*, the common kind, is decidedly the handsomest. The leaves are curiously shaped, and the flowers, which are of a beautiful pink, grow out of the bark of the stem and branches, and not, like those of other plants, among the leaves. These flowers have an agreeably acid taste, and, when fried in batter, make excellent fritters. The common Judas-tree is a native of the Levant, and it is frequently grown against a wall, producing its flowers in April; but the American kind, *C. canadensis*, is quite hardy. They both produce abundance of seeds, and grow best in a deep sandy loam, rather rich than poor.

**Clintonia.**—*Lobeliaceæ.*—Beautiful little annuals, flowering profusely the whole summer. They are natives of California, but will bear heat better than the generality of annuals from that country. They are generally raised on a hotbed (the seeds being sown in February), and planted out in May; but they may be sown in the open border in June.

**Club-Moss.**—A curious kind of moss, common in Europe and America, some of the kinds of which are very ornamental. *L. helveticum*, which is very handsome, is generally grown in pots in greenhouses. It should be grown in peat and loam, and allowed abundance of water.

**Daisy.**—The most beautiful varieties are the large double, the large quilled, and the hen-and-chickens; but there are many others. In Germany numerous curious varieties have been raised by saving the seed of the handsomest kinds. Each sort is much improved by being taken up, divided, and replanted three or four times every season. They are all admirable plants for making edgings to borders, and they are well suited for growing in pots, though at present they are almost neglected. They thrive best in a loamy soil, richly-manured, which should be dug over and well broken before planting; and they will bear transplanting even when in flower, provided they are taken up with a portion of soil attached. No plants are better adapted for covering a bed with one mass of color. Masses of any of the kinds of daisies may

be brought from the reserve ground and laid down on a bed in the flower-garden when just coming into flower, and taken back again to make room for other plants, when they have gone out of flower.

**Day Lily.**—Handsome perennial plants, with yellow or copper-colored flowers. They are quite hardy, and only require a moist soil and a shady situation. They are propagated by dividing the roots.

**The Furze.**—An erect evergreen shrub, with yellow flowers, which are produced nearly all the year. The common kind, in favorable situations, will grow ten feet high.

**Geum.**—*Rosaceæ*.—*Avens* or *Herb Bennet*.—Perennial plants, natives of Europe and America, with very handsome flowers. *G. Quellyon*, Swt. (*G. coccineum*, Bot. Reg.), is a splendid plant, a native of Chili, with large, orange-scarlet flowers. All the species are hardy, and require a light, rich soil; they are propagated by seeds, or by dividing the roots. Some of the species are now called *Sieversia*; the seed-vessels of *Geum* being hooked, and those of *Sieversia* ending in a straight, feathery point.

The **Geranium** wants hardiness only to make it the finest flower-plant of which I have any knowledge. Some give us flower with little or no leaf; others have beauty of leaf as well as of flower, but give us no fragrance; others, like the rose, give us this added to beauty of flower and of leaf, but give us them only for a part of the year. But the geranium has beautiful leaf, beautiful flower, fragrant smell from leaf as well as from flower, and these it has in never-ceasing abundance; and as to variety of sorts, as well in leaf as in flower, it surpasses even the flower of the auricula. How delightful the country where geraniums form the underwood and the myrtles tower above! Softly, my friends. Beneath that underwood lurk the poisonous lizards and serpents, and through those myrtle-boughs the deadly winged-adders rustle; while all around is dry and burning sand. The geranium is a native of the south of Africa; and though it will not receive its death-blow from even a sharpish frost, it will not endure the winter even in the mild climate of England. But then it is so easy of cultivation, it grows so fast, blows so soon, and is so little troublesome, that it seems to argue an insensibility to the charms of nature not to have geraniums if we have the means of obtaining earth and sun. The geranium is propagated from seed or from cuttings. The seed, like that of the auricula, does not produce flower or leaf like the mother plant, except by chance. It is easily saved, and for curiosity's sake may be sown to see if a new variety will come. But a cutting from any part of the plant, old wood or young wood, stuck into the ground, or into a pot, will grow and become a plant, and will blow in a month from the time you put it into the ground. You must have plants, indeed, to cut from, but these may be, in small number at any rate, in a window during winter. When the spring comes cut them up into cuttings, put these in the ground where you wish to have plants during the summer. They will be in bloom by July, and before October will be large as a currant-tree. Take off cuttings from these during September, put them in pots, and they are ready for the next spring. If you have a green-house you have geraniums in full bloom all the long dreary winter.

**Guelder-Rose.**—This is called here the snowball-tree. It is raised either from layers or suckers. Its bloom is of short duration; but, for the time, makes a grand show in a shrubbery. The suckers of it ought to be dug clean away every year.

**Heart's-Ease, or Pansy.**—A beautiful little annual, which has great varieties, and all of them pretty. It blows all the summer. It may be sown in the fall without any care about covering the ground; but it must not come up in this country till spring.

**Hollyhock.**—This is a fine showy plant for a shrubbery. There are double and single, and none but the double should be cultivated. It may be raised from seed or from offsets. If the former it does not blow till the second year. It will remain in the ground many years, and is perfectly hardy.

**Chinese Hollyhock.**—This is a more tender and far more beautiful kind than the common. It is raised from seed only; blows the second year, and only that year. It is, therefore, a biennial.

**Honeysuckle.**—This, amongst all English shrubs, is the only rival of the rose; and, if put to the vote, perhaps as many persons would decide for the one as for the other. Its name indicates its sweetness of taste, and the smell is delightful almost beyond comparison. The plant is also beautiful; it climbs up houses and over hedges; it forms arbors and bowers; and has a long-continued succession of blossoms. It grows wild in all parts of England, in many parts covering the hedges and climbing up the trees. There is little variety as to sorts. That which is cultivated has a larger and deeper-colored bloom, but the wild has the sweetest smell. It may be propagated from seed, but always is from cuttings; put into the ground in the spring, and treated like other wood-cuttings. Among the most valuable are the monthly fragrant, the red and the yellow trumpet, and the Chinese twining, *L. flexuosa*. The latter, in addition to the beauty and fragrance of its blossoms, which are produced several times during the summer and autumn, is also highly desirable for the rich, dark hue of its nearly evergreen foliage, and the circumstance of its not being liable to the attacks of insects, which destroy the beauty of some of the other species.

**Hazel.**—*Corylus Avellana*.—The common hazel is rather a fruit-tree than an ornamental shrub; but it is sometimes grown in pleasure-grounds and geometric gardens to form a shady walk. They require no particular care but planting the young trees in a loamy soil, giving them, if possible, a little of that rich yellow soil generally called hazel loam, from its peculiar adaptation to this plant, and clipping and training the branches so as to make the walk form one continued bower.

**Honesty.**—Hardy annual and perennial plants, which will grow in any common garden soil, and only require the usual treatment of annuals and perennials.

**Hyacinth.**—This is a bulbous-rooted plant, and, like all the plants of that class, is perennial. It may be raised from seed; but, as in the case of the auricula and many other plants, it is many chances to one, that out of a whole bed you do not get a good flower, and perhaps it is a hundred to one that you do not get a flower to resemble the mother plant. Therefore none but curious florists attempt to raise from seed.

The roots are propagated from offsets; that is to say the mother root, while it is blowing, sends out on its sides several young ones. The old root, young ones and all, are put away in a dry place out of the reach of severe frost till spring. Then when you plant the old one out to blow again, you take off the young ones and plant them also. They do not blow the first year, and, if weak, not the second. But in time they do, and then they produce offsets. This is the way the hyacinth is multiplied. It is a fine and fragrant flower; it blows early, and will blow well even in glasses in a room, but better in earth. A fine flower for a green-house, where it would be out in full bloom while the snow was on the ground.

**Jasmin** has the merit of a very delightful smell, and that only. Its leaf and flower are insignificant. It climbs, however, and is good to cover bowers. It well deserves a place against the wall of a house or the piers of a veranda, which it will cover in a very short time; or if planted against trellis-work, or against the frame-work of a bower, it will soon afford an agreeable shade, and produce its long, graceful, deep green shoots in such quantities as, after covering the bower, to hang down to the ground all round it, and require to be separated like a curtain by a person entering. This plant and the common ivy, when trained up a single post, with a spreading umbrella top of framework, form some of the finest objects in small gardens by their pendent branches, which not only hang down from a height of from fifteen feet or twenty feet to the ground, but trail along it to a considerable distance.

**Jonquil**.—An elegant and sweet-smelling bulbous-rooted plant. Propagated and cultivated in all respects like the hyacinth, which see.

**Kalmia**.—An evergreen shrub of great beauty, and of several varieties, great quantities of which are seen in most of the rocky woodlands of this country.

**Kill-Calf**.—It is a dwarf shrub, and may be raised from seed or from suckers. It is very pretty. When in bloom it resembles a large clump of sweet-Williams. It is so pretty that it is worth having in the green-house, where it would blow probably in April in Long Island.

**Laburnum**.—This is a tall and beautiful shrub, loaded when in bloom with yellow blossoms, in chains; whence it is sometimes called the golden chain. It is raised from the seed as easily as Indian corn.

**Larkspur**.—An annual of no smell, but of great variety as to colors, and when in a clump or bed presenting a great mass of bloom. There is a dwarf and a tall sort. The dwarf is the best. There is a branching kind which is good for nothing.

**Lilac**.—Desirable for its great masses of fine large bunches of bloom. There is the white, the blue, and the reddish. It is propagated from suckers, of which it sends out too many, and from which it should be kept as clear as possible. It is an ugly shrub when out of bloom. The leaves soon become brown; therefore there should be but few lilacs in a shrubbery.

**Lily of the Valley**.—This is the only lily that I should like to have. It is a pretty little dwarf plant that thrives best in the shade, where it produces beautiful blossoms of exquisite sweetness. It is a bulbous root, and propagated from offsets.

**Loose Strife.**—Herbaceous plants with yellow flowers, chiefly perennials, and of which one species, *L. nummularia*, money-wort, is a well-known evergreen trailer, which, when kept in a pot of moist soil, will produce shoots of two or three feet in length, which hang down on every side. *L. verticillatum* is an upright-growing plant, with abundance of showy, yellow flowers, which looks very well as a border-flower in a large garden. They will grow in any common garden soil.

**Lupin.**—A species of pea or tare, and frequently cultivated in the fields, and eaten in soup and otherwise by the Italians, and in the South of France. It grows, however, upon a stiff stem, and is upright, and branches out, like a tree in miniature. There is a great variety of sorts as to color of flower as well as to size of plant. The yellow dwarf is the best, and it smells very sweet. It is an annual.

**Magnolia.**—One of the finest of the laurel tribe. It can be raised from seed, or from layers. A very fine shrub indeed. There are several varieties of it. It will thrive in a loamy soil, rather rich; but it will grow still better in peat, and it requires no attention but training the branches, and nailing them against the wall. It produces its large flowers, which are from six inches to a foot in diameter when fully expanded, from August to October. *M. g. præcox* is a comparatively rare variety, with broader leaves than *M. g. exoniensis*, and still larger flowers, and they appear in July and sometimes in June. In purchasing both species in the nurseries, care should be taken to select plants which have been raised from layers; as seedlings, which are now sometimes imported from France, are often ten or fifteen years before they come into flower; whereas the others will flower the first or second year.

**Mountain Ash.**—*Pyrus aucuparia*.—A well-known tree, very ornamental in shrubberies for the abundance of red berries with which it is covered every autumn. It is quite hardy, and will grow in any soil and situation.

**Mignonette.**—An annual that bears abundance of seed. The plant and the flowers do not surpass those of the most contemptible weed; but the flower has a very sweet smell. It may, if you have a greenhouse, be had at any time of the year. The plants may stand at four or five inches asunder; but, if they stand thicker, the bloom is inferior, and does not last so long.

**Morning Star.**—This is a fine shrub. It can be raised from seed, or from layers.

**Myrtle.**—The myrtle is a native of climates where it is never cold. It will not endure even November all out, in Long Island. To have it, therefore, it must be housed in winter. It may be raised from seed, cuttings, slips or layers. The leaf of the myrtle has a fine smell; and, when the tree is in bloom, it is pretty. But, it is a gloomy looking shrub. One geranium is worth a thousand myrtles. The broad-leaved myrtle is the best in every respect, and especially because it is easily brought to blow.

**Narcissus.**—A bulbous-rooted plant, managed precisely like the *hyacinth*, which see. It blows early, is very beautiful, and has a delightful smell. Nothing is easier than the propagation and management of

flowers of this tribe, and few are more pleasing. The narcissus is a very nice thing for a parlor or a green-house.

**Passion-Flower.**—So called because the flower has a cross in the middle, and rays, resembling a glory, round the edges of it. It is a singularly beautiful flower. The plant is also beautiful. It is a climber, like the honeysuckle; and, like that, has a succession of blossoms that keep it in bloom a long while. It is raised from cuttings, which, treated as other cuttings are, easily take root.

**Pæony.**—A perennial that may be raised from seed or offsets. A grand flower for shrubberies. Each flower is usually as big as a teacup, and one plant will sometimes produce twenty or thirty.

**Pea, Sweet.**—There is a great variety in the annual sorts as to color of blossom, and, there is a perennial sort, called everlasting pea. This stands, of course, year after year. The others are sown and cultivated like the common garden pea. They should have some sticks to keep them up. This is a very showy flower, and remains in bloom a long while.

**Pink.**—This flower is too well known to need describing here. There is a great variety of sorts, as to the flower; but all are cultivated in the same way; exactly as directed for the clove, which see. The pink-root will last a great many years; but the flower is seldom so fine as the first year of the plant's blowing.

**Polyanthus.**—The polyanthus, the primrose, the oxlip, and the cowslip, are all species of the same genus. Every thing that has been said of the auricula (which see) may be said of the polyanthus. It is a very pretty flower, and universally esteemed. It blows finest out of the hot sun. Polyanthuses are best in beds; for a great part of their merit consists of the endless variety which they present to the eye. The polyanthus has a delicately sweet smell, like that of the cowslip.

**Poppy.**—A very bad smell, but still is to be sought for on account of its very great variety, in size, height, and in flower; and on account of the gayness of that flower. The seed-pods of some are of the bulk of a three-pound weight, while those of others are not so big as even a small pea. The smallest, however, contains about a thousand seeds, and these come up, and the plants flourish, with very little care. A pretty large bed, with two or three hundred sorts in it, is a spectacle hardly surpassed in beauty by any thing in the vegetable creation. It is an annual, of course. It is well known as a medicinal plant; but, it is not so well known as a plant from the seed of which salad-oil is sometimes made! The Germans, on the Rhine, cultivate whole fields of it for this purpose. It may be as well, therefore, for us to take care not to use German salad-oil, which, however, can with great difficulty be distinguished from oil of olives.

**Primrose.**—A beautiful little flower of a pale yellow and delicate smell. It comes very early in the spring; and continues a good while in bloom. Of the fibrous rooted flowers it is the next to the daisy in point of earliness. It is a universal favorite; and, in England, it comes abundantly in woods, pastures and banks. It is perennial like the cowslip, and is propagated in the same manner. The primrose is very ornamental as a border flower, but it has not sported so much as the

polyanthus, and there are therefore no florists' primroses. The border or garden varieties, however, which are mostly double, are very showy; among these the double flesh-colored, double white, double brimstone, double red, double copper, double dark purple and double violet, deserve a place in every garden. The single white and the single red, both of which are found wild, are also much admired, and are valuable as coming into bloom in March.

**Petunia.**—*Solanaceæ*.—Perhaps no plants have made a greater revolution in floriculture than the Petunias. Only a few years ago they were comparatively unknown, and now there is not a garden, or even a window, that can boast of flowers at all, without one. They may be sown in the open ground as soon as the seed is ripe, or early in spring, or suffered to sow themselves; care being taken in all cases in the open air to choose a sheltered situation, and to lay a few dead leaves over the bed if the weather should be severe.

**Ranunculus.**—It is a flower of the nature of the anemone, which see. It is propagated and cultivated in the same manner. These two flowers are usually planted out in beds, and make a very fine show.

**Rhododendron.**—It never occurred, perhaps, to any American to give this fine name to the laurel with a long narrow leaf and great bunches of blue, pink or white flowers, the balls or pods containing which appear the year before the flower. It is however a beautiful shrub.

**The Double Ragged-Robin.**—*L. foscuculi* (cuckoo-flower,) is of graceful habit, with delicate pink flowers, grows in any moist loam, and increases freely at the root. *L. chalconica*, when single, offers the form of a Maltese cross, in white, pink, scarlet, and saffron-yellow. The double scarlet variety is a brilliant flower, thriving best in light rich loam. There are double garden varieties of *L. viscaria*, *dioica*, and *sylvestris*. *L. alpina* makes a pretty decoration to the rock-work, with the help of a few handfuls of fresh heath-mould.

**The Rose.**—Of all the flowers none are more beautiful than roses; and none better reward the care of the cultivator. Roses are natives of Europe, Asia, Africa and America, but none have yet been found in Australia. The number of roses is almost incredible, above a hundred distinct species have been described, and there are above two thousand named varieties to be procured in the nurseries. The best known and most common kind of rose is the cabbage or Provence rose (*rosa centifolia*.) This species is a native of Eastern Caucasus, whence it was brought at a very early period. There are more than a hundred varieties of it; all very beautiful and very fragrant. The moss roses are all varieties of the cabbage. All the cabbage roses may be grafted standard high on briars of the common dog rose; and they all require a richly manured soil, and an open situation. The French or Provins rose (*rosa gallica*) is a compact erect-growing plant with large open flat flowers borne on stiff erect flower-stalks; thus forming as strong a contrast as possible to the cabbage rose.

**Damask Roses**—*R. damascena*—are of rough, twiggy, thorny habit, with light-green, somewhat downy leaves, and hardy constitution. A good example is the true York and Lancaster, a double flattish, striped rose, which occasionally produces blooms wholly white on one half of

their area, and wholly red on the other, thus symbolizing the union of the houses after the bloody wars of the White and Red Roses. They are fragrant flowers, but the bushes on their own roots are of irregular, scrubby, and inelegant growth. Budded as standards, they may be treated in the same way as the French roses. Show damasks, which deserve mention, are Madame Hardy, pure white, but with a green eye too conspicuous; Semiramis, fawn in the center, shaded with glossy pink; *la féroce* or *ferox*, very large, full, pink flowers, with an extra allowance of thorns on the branches; *la Constance*, or pæony-flowered, very large, flattish, full, pink, darker in the center, makes a showy standard; *la Ville de Bruxelles*, pink, very large and double; *la chérie*, delicate blush, cupped, very double; Madame Zoutman, delicate cream-color; and *pulcheria*, pure white. Do not prune these in too closely; let them run on, to form large heads, unless they are getting shabby and naked near the original bud.

**Running Roses.**—Of climbing roses, useful for pillars, temples, verandas, and running over the front of a cottage, there are several groups. The Boursault roses, *R. Alpina*, the Alpine or thornless roses, are very distinct. They are perfectly hardy, of exuberant growth if well fed, and afford a good foundation on which to bud other varieties, either as standards or trained against a wall. The crimson Boursault, or Amadis, has an abundance and a long succession of semi-double effective flowers, and makes a gay covering for an arbor or a rustic arch. The blush Boursault, or Calypso, or *de l'Isle*, or Florida, or the white Boursault, is still more rampant. Its perfect bloom is extremely beautiful, very double, of delicate texture, deep blush in the center, shaded to white outside; but the majority of flowers produced are imperfect and misshapen, as if some one had burst by a kick of the foot a cambric handkerchief rolled tight into a ball. These are the two leading types; other Boursaults are Drummond's thornless, *elegans*, *gracilis* and *inermis*, all of them different shades of rosy crimson and cherry-color. As standards they make enormous heads, which become pendent and weeping if allowed to run on.

**The Ayrshire Roses**—*R. arvensis*—are nearly as vigorous as the preceding, quite as hardy, and will serve the same purpose. They are mostly shades of blush and white. *Rosa ruga*, or the double Ayrshire, the Queen of the Belgians, the Dundee Rambler, and *splendens*, are the best of these, and very elegant they are in their peculiar style.

**The Evergreen Roses**—*R. sempervirens*—are named according to what we would wish them to be, rather than to what they are. They have smooth, shining, handsome foliage, which looks as if it ought to be as evergreen as a laurel-leaf; and the habit of their growth gives you the idea that they certainly might flower all the autumn through. But they don't. The best of them is *félicité perpétuelle*, an elegant climber, with clusters of small, very double, pinky white blossoms. *Donna Maria* is very pure white, as if the petals were made of rice-paper with graceful foliage, but more tender than the above. Grown as weeping standards, they should be suffered to make a cataract of drooping branches without restraint. *Adelaide d'Orleans* is not very, if at all, distinct from *félicité*. *Brunonii* has the merit of being rosy-crimson.

Beware how you prune any of the above.—They may be made to climb up trees like the honeysuckle.

Of the Prairie Rose or Bramble-Leaved Rose—*R. rubifolia*—from North America, the best perhaps is the queen of the prairies; but florists apologize for them, by stating that “the group is in its infancy.”

The Banksian Roses—*R. Banksia*—from China, white and yellow varieties, are half-hardy climbers, which must have plenty of space to ramble over, and a sheltered situation. If kept in bounds with the knife, they will only make the more wood and won't flower. Dead wood and irregular shoots must be rectified with finger and thumb. In all the Banksias, the blossoms are very small, in clusters, and very fragrant. Were they hardy, they might be budded on the tallest procurable stocks, to make trees of the magnitude of the weeping-ash. For instance, at Toulon, there is a white Banksia which, in 1842, covered a wall seventy-five feet broad and eighteen feet high; when in full flower, from April to May, there were not less than from 50,000 to 60,000 flowers on it. At Caserta, near Naples, there is another plant of the same variety, which has climbed to the top of a poplar-tree sixty feet high. And at Goodrent, near Reading, there is a yellow Banksia which, in 1847, produced above two thousand trusses of flowers, with from six to nine expanded roses on each truss.

The Many-flowered Roses—*R. multiflora*—from Japan and China, are very pleasing climbers, with numerous clusters of small flowers, of shades often changing and fading in the same cluster, from full pink to white. Unfortunately their hardihood is not to be depended on, and they can only be trusted as conservatory plants here, or to be budded and grown as standards in large pots. Beautiful varieties are Grevillei or the seven sisters, Laure Devoust, rubra, elegans, and alba, which will make a grateful return for whatever protection it may be thought fit to bestow upon them.

All roses to do themselves justice must have a rich soil; many are even gross feeders. The hardier and more robust kinds do well in deep alluvial loams, and will not object to heavy clayey land if well manured, and not too wet and cold. The Chinas, and many of the hybrids, when on their own roots, must have a lighter, warmer, better-drained soil, with a considerable proportion of sand and rotten animal and vegetable remains. In theory, all roses may be propagated by cuttings; in practice, non-professional gardeners find certain kinds, such as the mosses, the Provence, and the cabbage-yellow, of a difficulty which approaches the impossible. Many hybrids, the Bourbons, the Chinas, the noisettes, and others, strike readily, especially if assisted by a hand-light and bottom-heat. Species like the cabbage-yellow, which will neither bud nor strike well, must be increased by layers, the shoot being “tongued.”

The Siberian Crab.—This shrub is by some esteemed for its fruit, of which they make a conserve—more, I imagine, to gratify the sight than to gratify the palate. But, as a tall shrub, it yields, for the time, to very few. There is the red-blossomed and the white-blossomed. The branches of both, when in bloom, present ropes of flowers, while the trunk, the limbs, the branches, and the leaves, are all delicate in form and in hue.

**Snow-Drop.**—Is the earliest of all flowers. In England it blows in January. Once in the ground, it is not very easy to get it out again. Nothing but carrying it away, or actually consuming it with fire, will rid you of it. No sun, not even an American sun, will kill a snow-drop bulb, if it touch the ground.

**Stock.**—There are annuals and biennials of this name; and, if I were to choose amongst all the annuals and biennials, I should certainly choose the stock. Elegant leaf, elegant plant; beautiful, showy and most fragrant flower; and, with suitable attention, blooms even in the natural ground, from May to November in England, and from June to November here. The annuals are called ten-week stocks. And of these there are, with a pea-green leaf, the red, white, purple and scarlet; and then there are all the same colors with a wall-flower or sea-green leaf. So that there are eight sorts of the annual stock. Of the biennials, there are the Brompton, of which there are the scarlet and the white; the Dutch, which is red; the queen's, of which there are the red and the white; and the Twickenham, which is purple. As to propagation, it is, of course, by seed only. If there be nothing but the natural ground to rely on, the sowing must be early; the earth very fine and very rich. The seed is small and thin, and does not easily come up in coarse earth.

If the plants come up thick, thin them, when very young. And do not leave them nearer together than six inches. They, however, transplant very well; and those that have not place to blow in may be removed, and a succession of bloom is thus secured. If you have a greenhouse, glass-frame, or hand-glass, you get flowers six weeks earlier. The biennials are sown at the same time, and treated in the same way. They blow the second year; but, if there be great difficulty in preserving them, in the natural ground, through the winter in England, what must it be here! Indeed, it cannot be done; and yet they are so fine, so lofty, such masses of beautiful and fragrant flowers, and they continue so long in bloom, that they are worth any care and any trouble. There is but one way; the plants, when they get ten or a dozen leaves, must be put into flower-pots. These may be sunk in the earth, in the open ground, till November [Long Island], and when the sharp frosts come, the pots must be taken up, and placed out of the reach of hard frost, and where there is, however, sun and air. When the spring comes, the pots may be put out into the natural ground again; or, which is better, the balls of earth may be put into a hole made for the purpose; and thus the plants will be in the natural ground to blow. In this country they should be placed in the shade when put out again; for a very hot sun is apt to tarnish the bloom.

**Syringa, or Mock-Orange.**—A very stout shrub, with blossoms much like that of the orange, and with a powerful smell. It is propagated from suckers, of which it sends out a great many.

**Sweet-William.**—A very pretty flower. Makes a fine show. Comes double by chance; and is very handsome whether double or single. It is propagated from seed, the plants coming from which do not blow till the second year. The sweet-William root does not last many years. It may be propagated by parting the roots; and this must be done, to have

the same flower again to a certainty, because the seed do not, except by chance, produce flowers like those of the mother plant.

**Tuberose.**—This is a bulbous-rooted plant that sends up a beautiful and most fragrant flower. But, even in England, it cannot be brought to perfection without artificial heat in the spring. If got forward in a green-house, or hot-bed, and put out about the middle of June, it would blow beautifully in America. It is a native of Italy, and the roots are brought to England, and sold there in the shops. It is propagated and managed precisely like the hyacinth, which see.

**Tulip.**—Beds of tulips vie with those of carnations and auriculas. They are made "shows" of in England, and a single root is sometimes sold for two or three hundred guineas. And, why not; as well as make shows of pictures and sell them for large sums? There is an endless variety in the colors of the tulip. The bulbs, to have the flowers fine, must be treated like those of the hyacinth. The tulip may be raised from seed; but it is, as in the case of the hyacinth, a thousand to one against getting from seed a flower like that of the mother plant.

**Violet.**—This is one of the four favorites of the spring in England. It is a little creeping plant, that comes on banks under the shelter of warm hedges. The flower is so well known to excel in sweetness, that "as sweet as a violet" is a phrase as common as any in the English language. There is a purple and a white. Abundance of seed is borne annually by both; and the plant is perennial. If you propagate from seed, the flower does not come till the second year; but one plant, taken from an old root, will fill a rod of ground in a few years. There is a little plant in the woods of Long Island, with a flower precisely like that of the purple violet; but the leaf is a narrow oblong, instead of being, as the English is, in the shape of a heart; the plant does not creep; and the flower has no smell.

**Wall-Flower.**—It is so called, because it will grow, sow itself, and furnish bloom in this way, by a succession of plants, forever, upon old walls, where it makes a beautiful show. It bears abundance of seed, plants from which produce flowers the second year. Some come double sometimes. If you wish to be sure of double flowers, you must propagate by slips of double-flowering plants. There are the yellow and the mixed, partly yellow and partly red. All have a delightful smell, blow early, and are generally great favorites. I am afraid this plant, even with covering, will not stand the winter out of doors in America, unless in the south front of a building, and covered too in severe weather; for, even in England, it is sometimes killed by the frosts.

The following condensed list of flowering plants and shrubs copied from "The Garden," will be found valuable and reliable:

#### HARDY ANNUALS.

1. Blue Flowered Argeratum (*Argeratum Mexicanum*).—Color, blue; height, one foot; in bloom all the season.
2. Sweet Alyssum (*A calycina*).—White; fragrant; six inches; all season.
3. Love Lies Bleeding (*Amaranthus candatus*).—Red and yellow; summer.

4. Prince's Feather (*A. hypochondriacus*).—Red; summer.
5. Three-colored Amaranth (*A. tricolor*).—Is most beautiful on rather poor soil; summer.
6. Pheasant's Eye (*Adonis miniata*).—Red; showy; summer.
7. China Aster (*A. chinensis*).—Various colors; some lately imported varieties are very beautiful; eighteen inches; summer.
8. Cockscomb (*Celosia cristata*).—Crimson; eighteen inches; autumn.
9. Sweet Sultan (*Centaurea* of species).—(*C. moschata*,) purple; (*C. cretica*,) white; (*C. suaveolens*,) yellow; two feet; summer.
10. Morning Glory (*Convolvulus major*).—Various; climbing; summer and autumn.
11. Dwarf Morning Glory (*C. minor*).—Blue; eighteen inches; summer.
12. Chryseis (*C. crocea*).—Orange; one foot; all the season; (*C. Californica*) yellow.
13. Lupine (*Lupinus* of species).—Many varieties; various; one to five feet; some are perennial.
14. Cypress Vine (*Ipomœa* of species).—(*I. quamoclit*,) crimson; (*I. alba*,) white; climbing; summer and autumn. (*I. coccinea*,) a native Southern plant; is generally classed with the morning glories; red; climbing; autumn.
15. Phlox (*P. Drummondii*).—Crimson; rose, lilac, and white; (*P. Van Houtii*,) variegated; two feet; all the season.
16. Zinnia (*Z. elegans*).—Various; two feet; very showy; should be watered copiously; all the season.
17. Balsam, or Ladies' Slipper (*Balsamina hortensis*).—Various; two feet; summer and autumn.
18. Mignonette (*Reseda odorata*).—Yellowish green: six inches; chiefly valued for its perfume; all the season.
19. Nasturtium (*Tropœolum atrosonquineum*).—Crimson; climbing; in bloom all the season.
20. Canary Bird Flower (*T. aduncum*).—A beautiful climber.
21. Portulacca (*P. splendens*).—Purple; splendid; (*P. Thorburnii*,) yellow; (*P. alba*,) white; (*P. elegans*,) crimson; (*P. Thellusonii*,) red; should be grown in a mass to give the finest effect.
22. Malope (*M. grandiflora*).—Scarlet and white; three feet; summer.
23. Ten-weeks stock (*Mathiola annua*).—At least a dozen distinct colors; one foot; summer. All the varieties are well worthy of cultivation.
24. Marigold (*Tagetes erecta*).—Orange, yellow, straw-colored; eighteen inches; autumn. French Marigold (*T. patula*,) striped with deep brown purple, and yellow.
25. Clarkia (*C. elegans*).—Rose-colored; elegant; (*C. Pulchella*,) purple, showy; (*C. alba*,) white; one foot; all the season.
26. Candytuft (*Iberis amara*).—White; (*I. umbellata*,) purple; (*I. violacea*,) violet; (*I. odorata*,) sweet-scented. All these species are desirable.
27. Larkspur (*Delphinium ajases*).—Many varieties, double-flowered,

and superb. Branching Larkspur (*D. consolida*), various colors; summer.

28. Three-colored Gilia (*G. tricolor*).—Light-blue margin with dark center; dwarf; summer.

29. Poppy (*Papaver Marseillii*).—White, edged with red; eighteen inches; summer.

30. Sweet Pea (*Lathyrus odoratus*).—Many varieties—white, black, scarlet, and variegated; three or four feet; summer and autumn.

31. Hibiscus (*H. manihot*).—Yellow; (*H. Africanus major*), buff, with a black center; two feet; summer.

32. Clintonia (*C. elegans*).—Blue; six inches; very slender; autumn.

33. Verbena (*V.* of species).—Every shade of color from white to crimson; procumbent; very pretty; all the season.

34. Dwarf Sunflower (*Helianthus Californicus*).—A double flower.

35. Sun Love (*Heliphila araboides*).—Bluff; very pretty.

36. Pansy (*Viola tricolor*).—Various; all the season. [A perennial, but treated as an annual.]

37. Petunia (*P. violacea*).—Every variety of color; dwarf; all the season.

38. Yellow Everlasting (*Xeranthemum* of species).—Eighteen inches.

39. Evening Primrose (*Oenothera macrocarpa*).—Yellow; large flowered; dwarf; summer and autumn.

40. Loasa (*L. lateritia*).—Orange-colored; a beautiful climbing plant.

41. Calandrinia (*C. discolor*).—Rosy purple; very fine; summer and autumn.

42. Calliopsis (*C. bicolor*).—Three feet, very showy; autumn.

43. Marvel of Peru (*Mirabilis Jalapa*).—Many varieties; autumn.

44. Grove Love (*Nemophila maculata*).—Spotted; beautiful.

45. Heliotrope (*Tournefortia heliotropoides*).—White and blue; very fragrant; autumn.

46. Love-in-a-Mist (*Nigella Damascene*).—Showy; autumn.

For twelve sorts, the following would be a good selection: Numbers 1, 2, 7, 9, 10, 14, 15, 21, 23, 25, 33, and 37. To make up twenty sorts, add 6, 11, 13, 16, 19, 22, 29, and 41.

#### HARDY BIENNIALS.

1. Rose Campion (*Ayrostemma coronaria*).—Blooms all summer.

2. Foxglove (*Digitalis* of species).—Purple, white, and spotted.

3. Canterbury Bell (*Campanula* of species).—Various; blooms in July and August.

4. Hollyhock (*Althea rosa*).—All its varieties; summer and autumn. Desirable varieties can be propagated by dividing the roots. Biennial-perennial.

5. Gerardia (*G.* of species).—Yellow, purple, and spotted.

6. Dwarf Evening Primrose (*Oenothera corymbosa*).

7. Humea (*H. elegans*).—All the season.

8. Catch Fly (*Silene multiflora*).

9. Musk-scented Scabious (*Scabiosa atropurpurea*).

10. Naked-stemmed Poppy (*Papaver nudicaule*).

Though all the biennials are generally propagated by seeds, the double ones may also be successfully continued by cuttings and slips of the tops, and by layers and pipings. Biennials, it should be remembered, never flower till the second year.

## HARDY PERENNIALS.

1. *Herbaceous Plants.*

1. Columbine (*Aquilegia vulgaris*).—Single and double, many colors.  
 2. Harebell (*Campanula* of species).—All the species of this genus are very beautiful. Flowers single and double; many colors. *C. grandiflora* has superb blue flowers.

3. Carnation (*Dianthus caryophyllus*).—A much noted and very beautiful flower; propagated by seeds and by layers.

4. Sweet William (*D. barbatus*).—Many colors and shades of color—white, red, pink, and crimson. The French call it *boquet parfait*.

5. Pink (*D. plumarius*).—Many varieties.

6. Chrysanthemum (*Pyrethrum* of species).—Varieties and colors numberless; the last showy flower of the season. The following are all very beautiful:

## LARGE-FLOWERED.

Defiance—lemon-yellow.

Baron de Solomon—rosy-crimson.

Julia Langdale—rosy-purple.

Liencour—lilac and orange.

Magnificent—blush.

Mrs. Cope—crimson-purple.

Sphinx—bright claret.

White Perfection—pure white.

## SMALL-FLOWERED.

La Fiancée—white.

Harriette Lebois—rosy-carmine.

Cybelle—amber and gold.

Mignonette—rose.

Vartigene—crimson.

Paquerette—white-shaded crimson.

Sacramento—dark yellow, red center.

Louise—pale rose.

7. Double Daisy (*Bellis perennis*).—Many varieties, and various shades of white, pink, and crimson.

8. Dielytra (*D. spectabilis*).—A very beautiful plant; flowers pink and white; June and July.

9. Foxglove (*Digitalis* of species).—Various and beautiful. Theoretically a biennial; but may be continued by dividing into offsets.

10. Gentian (*Gentiana* of species).—Blue, yellow, and white; very showy.

11. Geranium (*Pelargonium* of species).—Species numerous; varieties numberless. For bedding-plants the scarlet, the nutmeg-scented (white), and the rose are the most desirable.

12. Forget-me-Not (*Myosotis sylvatica*).—Blue, pretty, and indispensable.

13. Hollyhock (*Althea rosea*).—We have mentioned this among the biennials, where it theoretically belongs; but it is practically a perennial from the way in which it increases by cuts. Hollyhocks are very beautiful in their proper places—in borders and among shrubbery. The varieties and colors are numberless. Choose the double-flowering sorts.

14. Lupine (*Lupinus* of species).—Some of the perennial herbaceous sorts are very beautiful; early in summer.

15. Double Ragged Robin (*Lychnis* of species).—Scarlet and white.

16. Pansy, or Heartsease (*Viola tricolor*).—Varieties innumerable; sometimes treated as an annual; blooms all the season.

17. Violet (*Viola* of species).—Many of the species, both native and foreign, deserve a place in the garden. Of *V. odorata plena*, the white and purple varieties are very beautiful. Bloom early.

18. Phlox (*P.* of species).—Various colors; no garden should be without some of the perennial species; summer.

19. Veronica (*V. chamædrys*).—Blue flowers; a good border plant; early in summer.

20. Valerian (*V. hortensis* et *V. Pyrenaica*).—White and red; grow and bloom well on walls and rockwork.

Nearly all the foregoing plants are easily propagated by dividing the roots, and will grow in any garden soil. A few of them will not prove hardy north of New York.

## 2. Tuberous-rooted Plants.

1. Dahlia (*D. variabilis*).—Colors and varieties numberless; a splendid autumn flower for large beds and among shrubbery. The following are a few of the finest varieties:

Amazone—yellow, margined with carmine.

Anna Maria—violet, tipped with white.

Belle Amazone—bright yellow, edged with gold.

Favorite—dark carmine.

Gazelle—delicate blush.

Grand Sultan—dark purple, with light edges.

Imperatrice Eugenie—black brown.

Madame Becker—maroon, tipped with white.

Malvina—purple, shaded with darker purple.

Renuncale Imperiale—lilac and purple.

Pretrose—dark carmine.

Wonderful—dark yellow, with purple stripes.

2. Iris (*I.* of species).—More than fifty species, some of which are tuberous-rooted; all very beautiful. *I. susiana* is the finest; flowers large and spotted with brown.

3. Marvel of Peru (*Mirabilis Jalapa*).—Generally treated as an annual; very beautiful; requires a warm border.

4. Everlasting Pea (*Lathyrus* of species).—The common everlasting pea is *L. latifolius*. Once planted, it will, for the most part, take care of itself. Some of the species are annuals.

5. Peony (*P. officinalis*).—Many varieties. The Chinese peony (*P. fragrans*) has pinky-purple flowers, and a rose-like perfume.

6. Ranunculus (*R.* of species).—Several species are hardy and desirable for border-plants. The double buttercup (*R. acris*) is well known.

7. Ladies' slipper (*Cypripedium* of species).—Several species are natives of our woods; very beautiful, but difficult of propagation.

8. Anemone (*A.* of species).—Many species; white, purple, yellow, and scarlet; succeed best in cool latitudes. Our native wood anemone (*A. nemorosa*) deserves mention among the garden flowers.

The tuberous-rooted plants are propagated by tubers, and some of

them also by seeds. Dahlias require a sandy soil. Sand and vegetable mould make a good mixture for them. No animal manure should be applied.

### 3. *Bulbous-rooted Plants.*

1. Crocus (*C.* of species).—Many species; yellow, lilac, white, etc. The yellow crocus (*C. luteus*) is the greatest favorite. The spring-flowering (*C. vernus*) works in well among shrubs and trees; blooms early in the spring.

2. Crown imperial (*Fritillaria imperialis*).—Color varies from light yellow to orange red; showy; suitable for borders.

3. Hyacinth (*Hyacinthus Orientalis*).—Varieties innumerable; choose an assortment of various colors.

4. Iris (*I.* of species).—Of the bulbous species, the Persian (*I. Persica*) is the most beautiful, but does better in a pot or frame, with some protection.

5. Lily (*Lilium* of species).—The species are very numerous, and all very beautiful. The following is a selection:

Common white (*L. candidum*).

Double white (*L. candidum flore pleno*).

Scarlet (*L. chalcedonicum*).

Japan (*L. lancifolium* of var.)—white, red, rose, spotted; very beautiful.

Turk's cap (*L. martagon*).—various.

Tiger (*L. tigrinum*).

6. Narcissus (*N. tazetta*).—Yellow and white variously combined; varieties numerous.

7. Daffodil (*N. pseudo narcissus*).—Many varieties.

8. Jonquil (*N. jonquilla*).—Bright yellow; fragrant; requires copious watering.

9. Snowdrop (*Galanthus nivalis*).—Double and single; both desirable.

10. Squill (*Scilla* of species).—Blue and white; *S. amoena* and *S. Siberica* are exceedingly brilliant and beautiful; blossom early in spring.

11. Star of Bethlehem (*Ornithogalum* of species).—White and variegated; easy of cultivation.

12. Tulip (*Tulipa Gesneriana*).—Varieties innumerable and of every shade. There are early and late sorts. Choose some of both.

### FLOWERING SHRUBS.

1. Rose (*Rosa* of species).—Multitudinous in species, and countless in variety. No two persons would make the same selection. For the few sorts wanted in a common garden, we suggest the following:

#### HYBRID PERPETUAL ROSES.

Augusta Mie—blush.

Geant des Battailles—brilliant crimson.

Caroline de Sansal—flesh-color.

Lord Raglan—fiery crimson.

Matharin Regina—lilac.

General Jacqueminot—crimson-scarlet.

Mrs. Elliott—rosy-purple.

Duchess d'Orleans—rosy-carmine.

Baron Hallez—light crimson.

Sydonie—light pink.

Baron Prevost—deep rose.

La Reine—deep rosy lilac.	Perle de Panche—white and red.	
Louis Peronny—deep rose, shaded.	Persian Yellow—deep golden yellow.	
PERPETUAL MOSS ROSES.		
Madam Edward Ory—rosy carmine.	Madame Plantier—pure white.	
Marie de Burgoyne—clear red.	CLIMBING ROSES.	
Salet—bright rosy red.	Queen of the Prairies—red, striped with white.	
General Drouot—purplish crimson.	Baltimore Belle—blush, nearly white.	
Perpetual White—pure white.	Mrs. Hovey—pale blush.	
SUMMER ROSES.		
Coupe de Hebe—brilliant pink.	Perpetual Pink—purple pink.	
Paul Ricaut—rosy crimson.		

2. Rhododendron (*R. Catawbiense*).—This splendid American flowering shrub is worthy of a place in every garden.

3. Azelia (*A. vicosa et A. nudiflora*).—White and purple; fragrant, too much neglected.

4. Flowering Almond (*Amygdalus nana*).—Beautiful pink flowers. Very desirable in every garden. Spring.

5. Magnolia (*M. abovata*).

6. Tree Peony (*P. Moutan*).

7. Japan Quince (*Pyrus Japonica* of var.).—Scarlet and white; very early in the spring.

8. Japan Globe Flower (*Kerrier Japonica*).—Double yellow flowers. Showy. Spring.

9. Spiræa (*S.* of species).—Many very beautiful species. The lance-leaved spiræa (*S. lanceolata*) is the most beautiful of all. Flowers, white; blooms in May. Very desirable indeed.

10. Deutzia (*D. gracilis et D. scabra*).—Flowers white. *D. Scabra* is the more hardy. Both should be cultivated where the climate will permit.

11. Guelder Rose or Snowball Tree (*Vibromum opulus*).

12. Garden Hydrangea (*H. Hortensia*).—White flowers.

13. Lilac (*Syringia* of species).—Some of the new varieties are fine.

14. Pomegranate (*Granatum flore pleno*).—Beautiful; should be a favorite wherever the climate is sufficiently mild.

15. Sweet-scented Shrub (*Calycanthus Floridus*).

16. Althea or Rose of Sharon (*Hibiscus Syriacus*).—Many varieties.

17. Honeysuckle (*Lonicera* of species).—Beautiful shrubs.

18. Pink Mezereum (*Daphne mezereum*).—Dwarf, pretty; flowers in March.

19. Rose Acacia (*Robina hispida*).

20. Mock-orange (*Philadelphus coronarius*).—White, fragrant. May and June.

21. Forsythia (*F. vividissima*).—A magnificent new shrub from China. Flowers bright yellow; very early in spring.

22. Crimson Currant (*Ribes sanguineum*).—Single and double crimson; early in spring.

23. Ashberry (*Mahonia aquifolia*).—Evergreen; bright yellow flowers; blossoms very early in spring.

24. Rose-colored Wiegela (*W. rosea*).—Delicate rose-colored blossoms.

25. Silver Bell (*Halesia* of species).—*H. diptera* is much finer than the common silver bell (*H. tetraptera*).

## CLIMBERS AND CREEPERS.

1. Virginia Creeper (*Ampelopsis hederacea*).
2. Trumpet Flower (*Tecoma radicans*\*).
3. Clematis (*C.* of species).—Several species; white, blue, and purple. The sweet-scented (*C. flammula*) is exceedingly fragrant.
4. Ivy (*Hedera* of species).
5. Honeysuckle (*Lonicera* of species).—The sweet-scented is one of the most desirable species; in bloom through the summer; very fragrant. The Chinese evergreen (*H. sinensis*) is also a very fine sort.
6. Chinese Wistaria (*W. sinensis*).—A very beautiful climbing plant, having blue flowers in clusters.
7. Climbing Rose (*Rosa* of species).—For these, see preceding list.
8. Jasmine (*Jasminum revolutum*).—Bright golden flowers; very fragrant; Southern. Deserves a place in every garden at the South.
9. Passion Flower (*Passiflora* of species).—The most beautiful one is the purple flowering (*P. incarnata*).
10. Birthwort or Dutchman's Pipe (*Aristolochia siphon*).—An excellent arbor vine.

**CHIMNEY AND OTHER APARTMENT PLANTS IN WINTER.**—The enjoyment which a real lover of flowers derives from watching the development of flowering plants within doors in winter is in some respects even more intense than that which is afforded him in summer, when flowers abound all around him.

The contrast between the verdure and perfume within, and the barrenness and bleakness without, is no doubt the chief cause of the especial pleasure with which the winter bloom, even if only of a few ordinary plants, on a chimney-piece or table, is contemplated.

Happily some flowers may be made to bloom in the humblest cottage, even in mid-winter, without trouble, or even cost worth calculating.

Hyacinths, narcissuses, and jonquils require but a little water at our hands, and standing-room over the mantelpiece; why refuse such moderate demands?

Let us follow the directions of a French gentleman,† who has furnished some hints worth attending to, respecting the winter management of hyacinths and other bulbs wanted for an apartment in a private house.

About the middle of October put, suppose, hyacinth-bulbs in the usual white bottle-vases, made and formed for such purpose.

Fill these vases with water, but not so high as to allow more of the bulb to touch the water than the fleshy knob at the base, from which the roots will issue. As there will be a regular waste of water caused

\* Gray; the *Bignonia* of the old botanists.

† M. Ysabeau's "Connaissances Utiles."

by evaporation and the absorbing power of the growing plant, there will be occasion for a constant supply of water to replace what has been evaporated, or consumed by the plant.

In a short time the fibrous roots come forth and plunge into the water, and at last fill the space within the glass, while the flower-stem and the leaves are growing without. Various bulbs may be forced in vases or glasses of the same kind, proving how the course of nature may be altered in the vegetation of plants by the exercise of human ingenuity.

One of the established laws respecting the growth of plants is, that, lay the seeds, bulbs or, tubers, from which they spring, as you will (in the earth or in water), the stem grows upward and the roots downward.

Yet by the following process, the hyacinth-bulbs can be forced to grow in the contrary position; that is, with their stems turned downward and their roots upward, which would appear, unless explained, as unnatural as it would be for a man to rest always on the crown of his head with his feet directly upward.

But the hyacinth can be brought to assume this position without difficulty, thus:

Fill with good mould, a little square tin box (with a lid and hinges), with a round hole in the middle, through which the stem of a bulb put into the mould within the box, can come forth in the natural way, just as if it were placed in a pot.

Then lay the box upside-down, over a glass filled with water. In this position now, the roots of the bulb must strike out sideways in the box above, while the head of the bulb projecting downward into the water, must send its stem in the same direction along the narrow glass, which will not permit it to turn sideways. The bottom of the box, now uppermost, has holes in it, through which water and air are supplied to the roots, which extend themselves one very side.

In the course of a few days the leaves and stem will be seen to grow in the water as they would have done in the air, if their position were reversed and they had not been forced to go downward.

This is a whimsical but interesting mode of growing bulbous plants; it is really curious, however, to see leaves and natural colors of flowers exactly the same in the water as they would be in the air.

Many bulbous plants may be ranged on a chimney or on a stand, in a warm room (but this ought never to be in a sleeping-room, as the odors in a close apartment are very prejudicial to human health), with very pleasing effect.

Orange and violet-colored crocuses, Chinese primroses, and double violets, in neat garden-pots, filled with earth, will be welcome occupants of any space among other plants of more pretension, and they will bloom perfectly well in an inhabited room. In short, if there be room enough, many plants, but, above all, the beautiful camellia, and even the humble Chinese primrose, will be ornamental in the gloomy months of early spring.

But let not mignonette be forgotten. This may be converted into a shrubby-plant by treating it in this manner :

In the autumn, put a strong plant, twelve inches in height, which had grown in the open ground, into a pot; take away all the stems except one, which you are to tie with rushes or bass-mat, all along its length, to a firm stake; head down the stem to within six inches of the surface of the earth in the pot. Several new shoots will push forth, and from these you are to choose five or six, to be left as nearly as possible at equal distances from each other, to form a base for the head.

These shoots will soon lengthen and flower; they should not, however, be allowed to ripen their seeds; therefore they are to be trimmed so as to leave but a single shoot to each tuft to replace those that are removed, which in its turn is to undergo similar treatment. Thus, by continually arresting the tendency to produce seed, and to produce useless and weakening stems, the principal one, and also the base of the flowering stalks, which are continually renewing themselves, are rendered woody.

In Belgium and Holland, where this mode of treating mignonette is common, large shrubs of it may be seen blooming ten or twelve years, and constantly during summer flowering in the balconies of the houses, and in winter in the apartments within.

Violets, too, receive similar treatment, and with equally good results.

**THE DAHLIA.**—This superb flower, which is so hardy and easily cultivated by any one who has a few yards of garden, deserves a special notice, and not only because it is one of the greatest ornaments in the garden during the autumn, but from the fact that most persons who see and admire it neither know from what part of the world it has been brought into our country, nor by whom, nor when.

M. Ysabeau, from whom I have derived most of this information, informs us that the Dahlia was discovered in 1800, by the distinguished Russian traveler and philosopher, Baron de Humboldt, who found it in its wild state in the high mountain valleys of Mexico.

The beautiful varieties we possess are proofs of what the art of man is permitted to accomplish in improving the qualities of the wild plants which the Creator has strewn in our paths. In its native state, it is a lowly plant, producing a very simple, unshowy flower.

The discoverer imagined that the tubers which he sent to Europe would prove, like those of the potato, good food for man and beast. Yet, had he tasted them, he must have found them to be exceedingly bitter and nauseous, besides being medicinally violent in effect.

The name, which ought properly to be that of Humboldt, became that of Dahlia, in compliment to the Swedish botanist, Dahl.

For some time the Dahlia, condemned as a worthless esculent, was unknown as an ornamental flower, but when its beauties became developed by the gardener's skill in crossing the seeds, and every year it expanded into finer varieties, it became a prized flower. Shadings of color, from white to the deepest purple, have been obtained in surprising extent, and the form of the flower has been rendered perfect. One color, however, is still wanted: a perfect blue Dahlia has not, I believe, yet appeared.

The Dahlia is propagated by the tubers, with a small piece of the stem adhering to each; and to have them growing freely in the open

garden immediately after the spring frosts (which would destroy the flower-buds), the usual way is to put them under a hot-bed frame until the shoots strike out from the tubers; thus advanced in their growth, they should be put toward the end of May into strong rich loam, deeply and well pulverized. The herbaceous stem soon lengthens, and requires a strong and high iron stake or frame to support it.

The first winter white-frosts destroy the beauty and vegetation of the plant, which should be cut down without delay. The tubers are then to be dried in the open air a few days before they are put by into a garret or dry store-room of any kind.

The multiplication of the Dahlia by tubers is the most common and convenient mode of culture. But grafting on the tubers is also employed.

To effect this, a young shoot of the variety which is to be propagated, is prepared at its lower extremity with the knife, in the usual wedge manner, and inserted into a slit opened on one side of the tuber. This is then put under glass into earth deep enough to cover the grafting-point, and left there until the parts have united and the scion has pushed out new leaves. The hand-glass over it should then be gradually removed.

New sorts can also be grafted on the stem of a Dahlia in full growth, just under the axil of a leaf, tying the bud and shoot to the stem with a bit of woollen thread.

By grafting thus in July, flowers of different colors may be produced in the following autumn on the same stock.

Dahlias are also raised from cuttings, stuck under glass, in June and July.

But a great number of varieties are obtained by impregnation of the species, of which the crossings may be without end.

By this mode the most brilliant and beautiful varieties may be gained amidst a multitude of very inferior sorts. All is uncertainty in this respect, but by the other modes any particular kinds can be multiplied every season.

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#### GUANO, AS A MANURE.—ITS COMPONENT PARTS, AND IMPORTANT USES IN THE GARDEN.

Guano, now estimated as one of the most highly-fertilizing manures, appears to have been long known among the Peruvians, by whom it has been used for ages. It is the excrementitious deposit of the numberless sea-birds with which the islands from which it is procured abound, and on which rain or humidity are equally unknown. By chemical analysis, it is found to contain about one fourth part of uric acid in combination with ammonia; it is also found to contain oxalic acid in combination with ammonia and potassa, and phosphates of ammonia, of lime, and of potassa.

Guano, thus rich in ammoniacal salts, acts particularly favorably on vegetation. By abstracting the carbonic acid from the atmosphere, it is the means by which the primary principles, as starch, mucus, etc., are formed, of which the body of the plant is constituted.

Plants manured with guano usually present a dewy appearance on their leaves early in the morning. The guano absorbs the vapor from the surrounding air, and this is especially fertilizing to plants, particularly in dry sultry weather.

Compared with other excrementitious manures, guano is found to be by far the most preferable. It is about four times better than night-soil, and more fertilizing, in the proportion of nearly three to one, than even dove-cote manure. It is, however, but fair to add that its effects upon the soil are not so lasting as are those of the stable manure, although far more prolific for a time.

Considerable quantities of this manure are found in the islands of the Pacific ocean; vast deposits have also been discovered on the islands abounding on the western coast of Africa. That imported from the small island of Ichaboe, is the richest in quality, and most estimated from its being very soluble and most free from sand or other useless admixtures.

The first cargo of Peruvian guano for the use of the British farmer, was imported in 1840, and since that time the importation has rapidly increased; but the trade in guano, which has been opened to the southwest coast of Africa, bids fair to be augmented to a degree which baffles calculation. In the first five months of the year 1844, nearly 7,000 tons were imported into Liverpool alone.

When Captain Farr of Bristol, who brought to England the first cargo of guano from Ichaboe, arrived at that island, it was covered with penguins, gannets, and other wild sea-fowl, in numbers that defied computation. Not having had any experience of the ways of mankind, they at first offered resistance, rather than betrayed any fear at his approach; but finding his encroachments interfered with their habits, they soon deserted the island, and retired to other more secluded situations.

The history of guano furnishes a singular and interesting evidence of the retributive operation of nature; it is, in fact, a return to the land, in a concentrated form, of a portion of the phosphate of lime, and other salts, which, carried away by the drainage waters, become the food of the fishes, the insects, and the weeds of the ocean; these becoming, in their turn, the food of the sea-fowls, are by those birds deposited, in the shape of indigested excremental matter on the rocky islands of the Pacific ocean, forming thus a portion of the guano which is now fertilizing the soil of England, to enter into the composition of other vegetables, and other animal substances.

The principal consideration, in using this fertilizing manure, is to keep in mind its peculiar and powerful qualities. In this respect, its application, as a manure, may be assimilated to the manner in which salt is applied. Salt, if used in its raw state, or in too powerful a solution, destroys vegetation. Guano, in like manner, must never come in close contact with plants; for all seeds, in the process of germination, give off a greater or lesser quantity of carbonic acid, and this acid, having a strong affinity for the ammoniacal portion of the guano, attracts it so powerfully, as to interfere with, and even destroy vegetation.

For farm purposes, guano should be mixed with about four times its own bulk of finely-sifted mould, or charcoal ashes, but never with lime, nor used on land that has been lately limed, as lime rapidly expels the ammonia from the guano, and thus deprives it of its principal fertilizing quality.\* For the kitchen-garden, the most simple and also economical mode of preparing the guano, is as follows: spread upon the surface of the ground, about three inches thick, one hundred pounds' weight of mould that has been sifted; sift upon this about half that quantity of guano, and upon this sift another hundred pounds' weight of mould. Protect the heap from the weather by matting, or by any other kind of covering, and leave it for three days, at the end of which well mix it, and sift it through a garden sieve. This quantity is sufficient for the eighth part of an acre. It is now ready for use, and may be put upon the ground in the proportion of half a pound of this compost to each square yard. Its application for vegetables causes an exceedingly abundant crop, particularly if used in cloudy weather, or just before rain sets in.

For the flower-garden, it is perhaps best applied in a liquid state. In sifting guano for the kitchen-garden, some portion, such as decomposed bones, beaks, or claws of birds, will not pass through the sieve; if these be steeped in water, in the proportion of four ounces to one gallon of water, a rich liquid manure will be produced. Or, if the guano itself be used, not more than from two to three ounces to each gallon of water should be taken. Potted flowers watered once a week with this solution will be much benefited.

Guano is also useful to fruit-trees, and may be applied by well digging in and about the roots five or six pints of earth and guano, prepared with sifting and mixing as previously directed. This quantity is for standard trees; about half that quantity will be amply sufficient for an espalier; and about one pint of the compost, well dug in and mixed with the earth about each currant, gooseberry, and raspberry bush, will be found highly beneficial.

In using it for potting, the compost must be well mixed with good earth, care having been taken to thoroughly powder all the lumps in the guano. If the plant be already potted, the guano compost may be carefully stirred with the earth in the pot to about the depth of one or two inches.

When guano has been used in the compost state, that is, well mixed with sifted earth, as above directed, its subsequent application in a liquid state should not be in a greater proportion than at the rate of half an ounce of guano to one gallon of water.

The experiments which have been made, with a view to ascertain the effects which result from using guano as a manure, both in the kitchen-garden and the flower-garden, lead to the conclusion that, in the kitchen-

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\* Lime or chalk is sometimes so mixed up in the soil, as to exhibit no indication of its being present. To ascertain the fact, mix about half a pint of the soil in about a pint of water that has been boiled and suffered to become cool. Add to this, three table-spoonfuls of sulphuric acid; if an effervescence takes place, something like that of soda-water, do not use guano to the soil, as chalk or lime is mixed with it.

garden, it may be generally and successfully used, if carefully applied after having been first well mixed with sifted earth, and not in too great a quantity. For potatoes, carrots, and onions, it is particularly good, and causes abundant crops, if used in about the proportion of one part of guano well mixed with nine parts of light soil, and half a spadeful of this compost spread upon a square foot of earth, and well watered immediately after. About two ounces of guano to the square yard, is the quantity we would recommend for small gardens.

The manner in which guano gives out its richness to plants, may be understood from Professor Cuthbert Johnson's description. He says—“Until a plant has its leaves expanded, it lives at the expense of the seed; but the moment it spreads its leaves, it lives at the expense of the air. All plants contain oxygen, hydrogen, nitrogen, and carbon, three of which are gaseous substances. When a plant begins to spread its leaves, it absorbs or sucks in carbon from the air, wherein it existed in a state of carbonic acid. Nitrogen, an important ingredient of plants, existed also in the atmosphere; but the plant had not the power to suck it in from the air for its nourishment. Ammonia and nitric acid were the only two forms in which plants would obtain nourishment from nitrogen. So long as it was unknown that plants required this substance, it was not thought necessary to supply it in the way of manure, nor to preserve it from being lost to the soil. No manure can be efficacious unless nitrogen be present in it; and if manure be treated so, by exposure to the air, or by other means, as to allow the ammonia to escape, it is injured to that extent.

Guano, to be effectual, should be used in wet weather, or upon a wet day, for the sooner it is washed into the earth, the better; on no account should it be used on a windy day. It kills slugs, grubs, animalculæ, etc., and goes far to prevent the attack of blight and fly.

In the flower-garden it may be advantageously used, but here its application must be even more carefully studied than in the kitchen-garden. Perhaps it is most safely used in a liquid state for most flowers growing in the beds. One pound of guano may be put into eight gallons of water and let stand for about four hours, when eight more gallons of water may be added. Stir this up for use, and it will be found a valuable liquid for pouring on land, especially for flowers.

As a general principle, it may be considered that guano may be applied to all hard-wooded and hard fiber-rooted plants, whether vegetables or flowers; thus it is very good applied to most shrubs, like the myrtle, fuschias, rhododendron, ribes sanguinea, rose-bushes, etc., but must be carefully and very sparingly used to all plants of a succulent kind, particularly such as the balsam, and the like. To geraniums, its use is of rather a doubtful character, unless used in the liquid state, and then it must be much diluted, say to the extent of twice the usual quantity of water.

With a variety of potted plants, such as fuschias, calceolores, roses, camellias, and the like, guano has been used with success; both flower and foliage have been much improved. Applied to potted plants, it should be used in the liquid state, about an ounce to a gallon of water, applied twice a week.



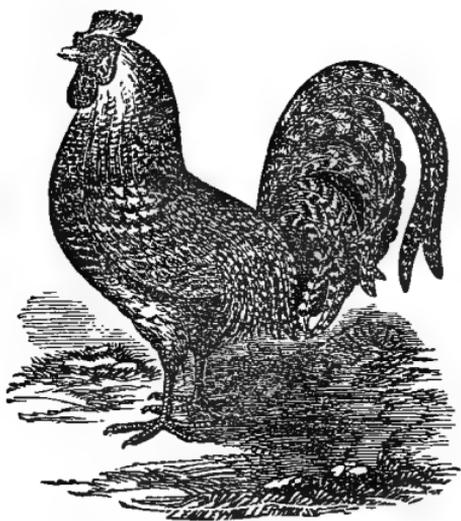
DOMESTIC POULTRY:

THEIR

BREEDS AND TREATMENT

IN

HEALTH AND DISEASE.



THE DOMINIQUE COCK.

**DOMESTIC POULTRY.**

“How grateful 'tis to wake  
 While raves the midnight storm, and hear the sound  
 Of busy grinders at the well-filled rack ;  
 Or flapping wing or crow of chanticleer,  
 Long ere the lingering morn ; or bouncing flails  
 That tell the dawn is near ! Pleasant the path  
 By sunny garden wall, when all the fields  
 Are chill and comfortless ; or barn-yard snug,  
 Where flocking birds, of various plume and chirp  
 Discordant, cluster on the leaning stack  
 From whence the thresher draws the rustling sheaves.”

**VIEW OF THE IMPORTANCE OF THE SUBJECT.**—Poultry-keeping is an amusement in which every body may indulge. The space needed is not great, the cost of food for a few head insignificant, and the luxury of fresh eggs or home-fatted chickens or ducks not to be despised. In a large collection of poultry may be read the geography and progress of the commerce of the world. The peacock represents India ; the golden pheasant and a tribe of ducks, China ; the turkey, pride of the yard and the table, America ; the black swan, rival of the snowy monarch of the lakes, reminds us of Australian discoveries ; while Canada and Egypt have each their goose. The large fat white ducks—models of what a duck should be—are English, while the shining green black ones come from Buenos Ayres. And when we turn to the fowl varieties, Spain and Hamburg, Poland and Cochín China, Friesland and Bantam, Java and Negroland, beside Surry, Sussex, Kent, Suffolk, and Lancashire, have each a cock to crow for them.

**VARIETIES OF THE DOMESTIC FOWL.**—1. The **MALAY FOWL**, from its size and strength, is admirably adapted for crossing with the Dorking and other native breeds. 2. The **JAVA FOWL**, nearly resembling, and in the opinion of some, identical with, the Malay. 3. The **COCHIN CHINA** breed, equal in most respects, and more prolific than the Malay. 4. The **SPANISH FOWL**, perhaps the best breed known for laying. 5. The **POLISH FOWL**, a noble and very beautiful bird, and an excellent layer. 6. The **SPANGLED VARIETIES**, including the whole class of Gold and Silver Spangled, known in different countries as Spangled Hamburgs, Every-day Dutch, Bolton Bays, Bolton Greys, Chittyprats, Creoles, Corals, etc. 7. The **SPECKLED and WHITE DORKING**, the most delicate of all the varieties for the table. 8. The **SUSSEX FOWL**, most probably a variety of the Dorking. 9. The **GAME FOWL**, graceful of form and plumage, with undying courage, and excellent for crossing with common varieties. 10. The **PHEASANT FOWL**, erroneously said to originate in a cross with the Cock Pheasant. 11. The **BANTAMS**, more remarkable for their beauty than any other quality.

The **Malay Fowl**, called also the **Chittagong**.—This is a large and heavy fowl ; it is a close and hard-feathered bird, from which circumstance it

often weighs more than it appears to do. It stands tall, with very upright gait. The legs are long, the thighs are remarkably long, strong, and firm; and the tarsi of moderate length, round, stout, and of a yellow color. The tail is long and drooping, the head snake-shaped, *i. e.*, with a great fullness over the eye, and of a flattened form above. The thick comb, scarcely rising from the head, has been compared to half a strawberry; so that the *natural* form of comb a little resembles that of the game-fowl when dubbed. The neck is rope-like and close-feathered, and the bird is almost without wattle.

The Malay should have a pearl eye, and a hawk bill free from stain.

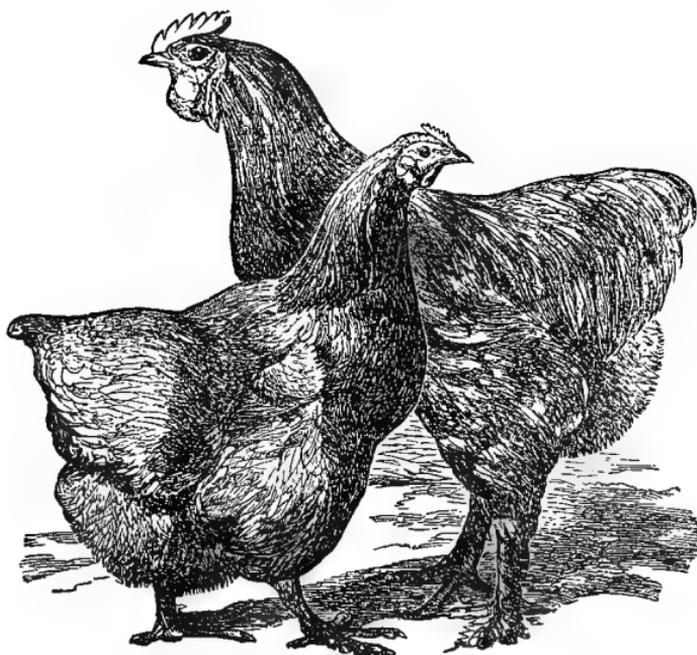
The pullets commence laying early, and are often good winter layers. The egg is of medium size, with a tinted shell. The chickens when half-grown, are gaunt, ungainly looking young things, and, like many choice kinds, fledge slowly.

Height is a great point in a Malay. Old fanciers had a curious mode of comparing notes upon this point. They used to hold the bird out at full stretch, and measure the length, from beak to toe, on a table. Some of old Mr. Castang's breed are mentioned as having measured thirty-eight and a half inches. The cocks are said to have weighed from nine and a half pounds to eleven pounds, and the hens from eight pounds to ten pounds.

I have known a Spanish cock and a Malay hen produce excellent fowls for the table, being large, fleshy, and well-flavored.

The Malays are inveterate fighters; and this is the quality for which they are chiefly prized in their native country, where cock-fighting is carried to the extent of excessive gambling. Men and boys may be frequently met, each carrying his favorite bird under his arm, ready to set to work the moment the opportunity shall occur.

**The Cochin China.**—The history of the Cochin-China fowl might be the history of the poultry mania, an excitement which rivaled manias of greater importance in its strength. They were introduced some time about the year 1845, and soon became known and popular. Their large size, in the eyes of most persons, their handsome appearance, the brightness of their colors, the number of their eggs, and their gentle, quiet disposition, soon made their way; they were much liked, and were bought eagerly at from three to six dollars each; at that time a very high price for a fowl. Cochin China hens are excellent layers of medium-sized eggs, which they produce in great abundance at the season when they are of greatest value. The chickens, if bred from mature birds, are exceedingly hardy; and the fowls are of quiet, domestic habits, and easily kept within bounds. A first-class fowl should be compact, large, and square-built; full in the chest, deep in the keel, and broad across the loins and hind quarters. The best in form are as compactly made as Dorkings. The head is delicately shaped, with a short bill, and the comb fine in texture, rather small, perfectly single, straight, and equally serrated; the wings small and closely folded in, the tail short, and carried rather horizontally; the legs very short, yellow (according to rule) and heavily feathered. This fowl has, however, lost its earlier popularity, and is now generally discarded by good poulterers, being found a voracious feeder, and yielding a comparatively small return for the food consumed.



COCHIN CHINA, OR SHANGHAI FOWL.

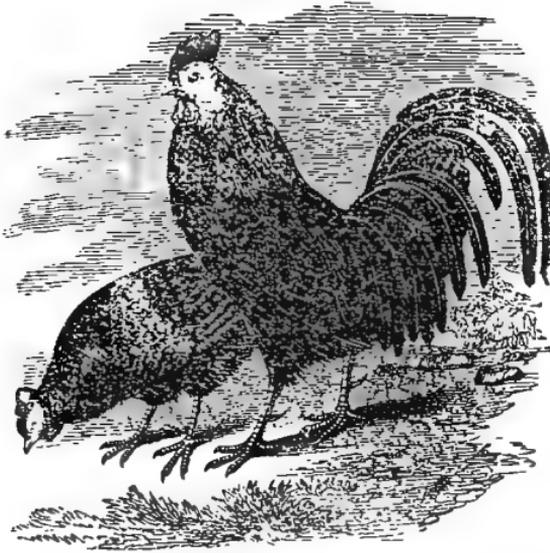
**Spanish Fowls.**—The chief drawbacks in rearing Spanish are the delicacy of the chickens while young, and the length of time which elapses before the youngsters show their quality, unless they are bred from much better fowls than most persons can command; in which case the chickens develop their prize properties earlier. The combs of the hens shrink very much when they are not laying, and during the moulting season. In winter they should be protected from severe cold, which is very apt to seize the comb and wattles of the cocks.

The hens lay larger eggs than any other kind of fowl we have: they are non-sitters. The chickens hatch out black, with a little mixture of dull white, or yellow. They fledge slowly, and are very delicate while young.

*The Minorca.*—This is a plump-bodied, useful fowl, which would be a Spanish, if it could persuade its parents to bequeath it the white face which breeders and judges think so much of. The plumage is black, with metallic luster, and the hens lay fine large eggs. I believe they sit more than the Spanish.

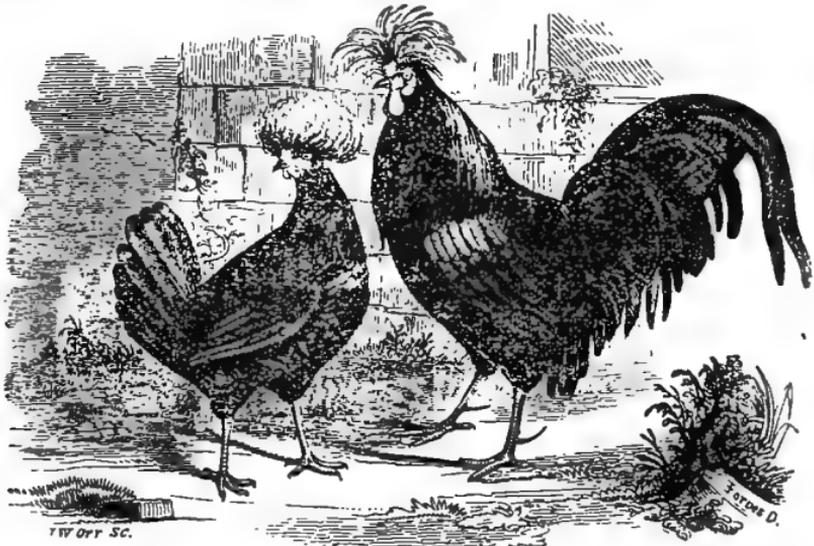
*The White Spanish.*—The white-faced white Spanish I believe to be merely a sport of the white-faced black Spanish. The red-faced white Spanish, or white Andalusian, is really a Spanish fowl. They are good layers, and very precocious. The stock was brought from Spain.

*Andalusian Fowls.*—The birds which have been shown under this name are in color the kind of gray called blue, which is sometimes laced and shaded with black. Mr. Taylor, late of Shepherd's Bush, imported the original stock from Spain. They are good-looking fowls with large pendent scarlet combs like the Spanish, and are said to be good layers.



THE SPANISH FOWL.

**Polands.**—With these fowls there has been much difference of opinion respecting the applicability of the name. Some, with apparent reason, would divide them into three families; the St. Jago, the Turkish, and



THE POLISH FOWL.

the Hamburg, or muffed kind. We rank as Polands all fowls with their chief distinguishing characteristic—a full, large, round, compact tuft on the head. It is a class of fowls, the beauty of which, united to their useful qualities, must make general favorites. All the sub-varieties are of medium size, neat compact form, with full plump bodies, full breast, lead-colored legs, and ample tails. The kinds more or less known are very numerous: they are all good layers.

The *White-crested Black Poland* is a fowl of a deep velvety black, with a large white tuft on the head. They should be without comb; but many have a little comb in the form of two small points before the tuft. The tuft, to be perfect, should be entirely white; but it is rare to meet with one without a slight bordering of black, or partly black feathers round the front.

The *Golden* and *Silver Polands* are, the one a gold color, the other white spangled with black: the tuft, as in the black, should be large and compact. The more completely the color in the tuft can partake of the character of feather in the rest of the bird, the better. Some persons admit white in the tuft of the golden Poland, but I cannot help thinking the mixture a great fault. Mr. Baily (well known as one of the best judges) would like to see the feathers of the tuft laced. This is very difficult of attainment. The marking of the bird is a black spangle on the golden or silver ground-color. The wings are barred, and the best judges admit lacing on the wing-coverts.

There are several other varieties of tufted fowls or Polands, and many intelligent breeders have devoted great attention to them.

The black and the white are both beautiful, with full tufts, muffs, and clean legs.



THE GOLDEN SPANGLED HAMBURG FOWL.

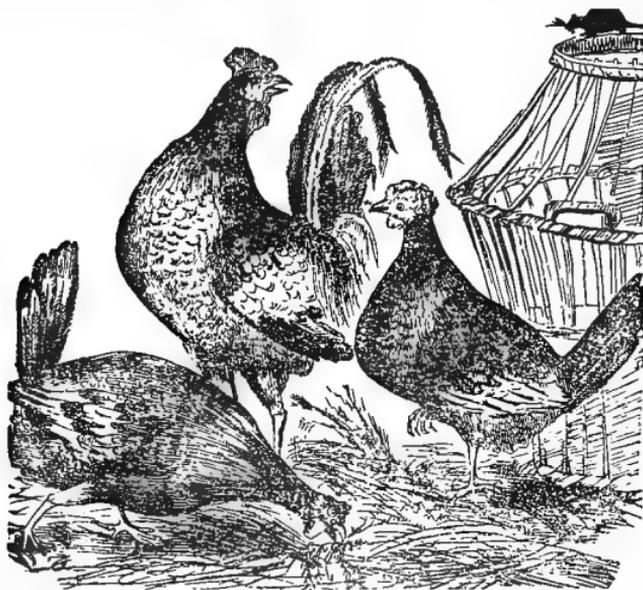
**Hamburg Fowls.**—The Hamburg is a medium-sized fowl, with a brisk and spirited bearing, a brilliantly red double comb, ending in a spike at the back, taper blue legs, ample tail, exact markings, and a well developed white deaf ear. They are profitable fowls to keep, being excellent layers, and not large eaters. They are what pigeon-fanciers would call good field-birds, delighting to wander far abroad, and to seek provender for themselves. The varieties are,

The *Spangled Hamburg*, or pheasant-fowls, the marking of which takes the form of a spot upon each feather. They are divided into gold and silver, according to the ground-color of the plumage.

The *Penciled Hamburg*, in which the marking is more minute. When seen at a distance, the hens have the appearance of being minutely speckled in plumage, and over this a pure white hackle falls and contrasts very prettily. When one feather is taken separately, the marking is very exact and beautiful, being a regular penciling; *i. e.*, the

feather is divided by bars evenly arranged, of alternate white and gold color. Like the spangled, they are divided into golden and silver for the same reason—the ground-color of the plumage. In all these birds, exactness of the markings is a great point.

*The Black Hamburg.*—This is a very beautiful variety, being of a brilliant black, with metallic luster. The brilliancy of the plumage, contrasted with the coral-red of the spiked comb and the white earlobes, renders this fowl so attractive in appearance, that we cannot help wondering that it is not more general, particularly as, like all the Hamburgs, it is an excellent layer.



THE DORKING FOWL.

**The Dorking Fowl.**—The Dorking would appear to owe its name to its having been chiefly bred in a town of Surry, of the same appellation. That the peculiarity of five toes, or, in other words, of two hind toes instead of one, is to be regarded as a distinctive character of the breed, is by some writers questioned, and by others wholly denied. For my part, I should say, that whenever this characteristic is absent, a cross has been at work.

I do not, however, mean to assert that this possession of two hind toes instead of one, has never occurred in any other family of fowl except those bred at Dorking, in Surry, for Aristotle has mentioned the existence of a similar peculiarity among certain fowl in Greece, and both Columella and Pliny assert the existence of such in their time in Italy, so also does Aldrovand; and these authors lived hundreds of years ago; and, oddly enough, these breeds were remarkable, as are our own Dorking, for being good layers and good sitters.

The color of the Dorking is usually pure white, or spotted or spangled with black; these colors sometimes merge into a gray or grizzle. The hens weigh from seven to nine ponnds; stand low on their legs;

are round, plump, and short in the body; wide on the breast, with abundance of white juicy flesh. The hens are generally good layers, and their eggs, though smaller than the egg of the Spanish and Polish breeds, are of good size and well flavored. These birds have been long prized, and it is now many years since their superiority over our ordinary domestic varieties was originally discovered and appreciated; they were first noticed, and the variety adopted, by the Cumberland breeders, whence they were soon brought into Lancashire and Westmoreland, and gradually spread over all England. Whether, however, from injudicious treatment, or imperfect feeding, or change of climate, or from whatever cause, it is certain that, when met with far from their native place, they appear greatly to have degenerated from their original superiority of character. In this, and all other varieties of fowl, fresh blood should be introduced from time to time, or the breed degenerates.

The best breed of the gallinaceous fowls is the produce of the Dorking (Surry) cock and the common dunghill fowl. This cross is larger and plumper, and more hardy than the pure Dorking, without losing delicacy of flavor or whiteness of flesh.

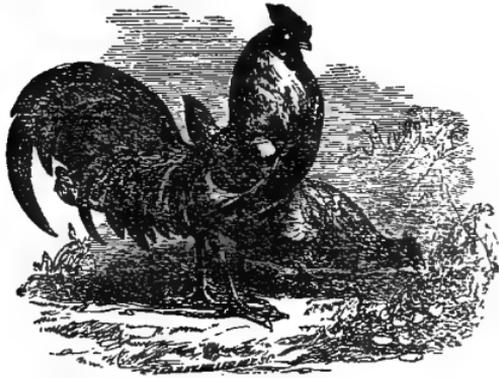
The characteristics of the pure Dorking are, that it is white-feathered, short-legged, and an excellent layer. The peculiarity of this established variety, which has frequently five claws perfectly articulated (with sometimes a sixth springing laterally from the fifth, but always imperfect), is well known. The crossing with the Sussex fowl has however greatly diminished the monstrosity in the Surry pentadactylus variety. But though the true Dorking, which is white, is much esteemed, that color is rare, and prized for the ornament of the poultry-yard; speckled colors are most generally seen with the higgler.

**The Sussex.**—This is but an improved variety of Dorking, similar in shape and general character, usually of a brown color, but possessing the advantage of wanting the fifth toe; we say advantage, for the Dorking fowl frequently becomes diseased in the feet, the cocks especially, in consequence of breaking the supplementary toe in fighting.

**The Game Fowl.**—The game fowl is one of the most gracefully-formed and most beautifully colored of our domestic breeds of poultry; in its form and aspect, and in the extraordinary courage which characterizes its natural disposition, it exhibits all that either the naturalist or the sportsman recognizes as the *beau ideal* of high blood, embodying, in short, all the most indubitable characteristics of gallinaceous aristocracy.

We do not possess any very satisfactory record of the original country of the game fowl; but we are disposed to cede that honor to India, the natives of which country have always been remarkable for their love of cock-fighting; and we also know that there still exists in India an original variety of game cock, very similar to our own, but inferior in point of size. As to the date or occasion of their first introduction into the British islands, we know nothing certain; but it is probable that we owe it to the invasion of Julius Cæsar, the Romans having been very fond of the sport of cock-fighting.

It is not only for its pugnacious qualities that the game fowl is to be noticed; it yields to no breed, nay, perhaps is superior to most, in the

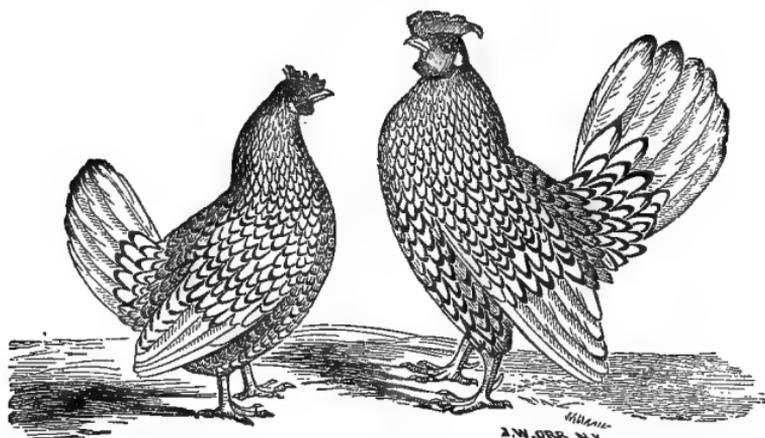


THE GAME COCK AND HEN.

whiteness and sapidity of its flesh; the hens are excellent layers, and the eggs, though of moderate size only, are remarkable for the delicacy of their flavor. The game cock is very attentive to his female train, and ever ready to do battle in their defense; but not unfrequently he becomes savage and dangerous. A blow with his spur is no trifle. Children have been severely injured, and cases have been mentioned in which they have been killed. From these causes, and from the fact that the young broods, as soon as fairly feathered, begin to fight among themselves with desperate determination, blinding each other, stripping the skin from each other's heads and necks, and killing each other on the spot, many persons object to keep this breed; and it must be confessed that it occasions great trouble; it is not always convenient or possible to separate the young broods; and as the young cocks and hens fight indiscriminately, it not unfrequently happens that one-half is destroyed in the *mêlée*, while most of the survivors are so mangled as to render it necessary to put them out of pain, to the mortification of the farmer or breeder of fowls for profit; for not only are the broods lost, but the time also.

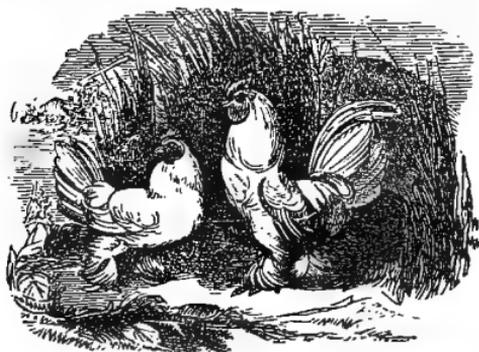
Of all breeds, the game breed is the most beautiful, whether we look to contour or coloring; the game cock carries himself proudly, and yet gracefully; his port and bearing proclaim his fiery spirit and undaunted mettle, which endure even to his last breath; for while prostrate and mortally wounded, he will answer the insulting crow of his victorious rival, and make a last effort to revenge himself before the spark of life is extinct. No wonder that the gallant cock should have been chosen as the emblem of courage.

**Bantams.**—The classes of Bantams are gold-laced, silver-laced, white, black, and one for "any other variety;" from which last may especially be selected the exceedingly beautiful game Bantams, and the once popular, but now rare, booted sub-variety. Diminutive size and bold carriage are important points in all Bantams; in other respects, the different kinds differ as much as distinct varieties of fowls can do. The Bantams are peculiarly fancy fowls; they have been accused of not being a useful kind, as of course there is little to eat in a fowl which, when full grown, should weigh, the cock about a pound, the hen less, the eggs



THE SEABRIGHT BANTAM.

being small in proportion. But how many hundreds of amateurs there are whose opportunities give them no room for full-sized fowls, but who, delighting in living things, can indulge their fancy and beguile many hours which would otherwise prove weary ones, by keeping a few Bantams. Their small eggs are delicacies which would tempt almost any invalid.



WHITE BANTAM COCK AND HEN.

The *gold and silver-laced, or Seabright Bantam*, is perhaps the most popular kind of all. The size should be quite diminutive, and the carriage saucy.

The *booted Bantam*, of which the most beautiful we have seen have been pure white, are completely feathered on the legs—

not feathered down one side only, like the *Cochin China*.

*Game Bantams* are exact miniature representatives of game fowls, black-breasted reds, duck-wings, and other colors. An exact duck-wing game Bantam is the most beautiful little creature one can imagine.



BLACK BANTAM COCK AND HEN.

**THE DOMESTIC TURKEY.**—The domestic turkey can scarcely be said to be divided, like the common fowl, into distinct breeds, although there is, indeed, considerable variation in color, and also in size. The finest and strongest turkeys are said to be those of a bronzed black, resembling as closely as possible the original stock; they

being small in proportion. But how many hundreds of amateurs there are whose opportunities give them no room for full-sized fowls, but who, delighting in living things, can indulge their fancy and beguile many hours which would otherwise prove weary ones, by keeping a few Bantams. Their small eggs are delicacies which would tempt almost any invalid.

are reared the most easily, are large, and fatten rapidly. Some turkeys are of a coppery tint, others of a delicate fawn-color, others particolored, gray, and white, and some few of a pure snowy white. All these are considered inferior to the black; their color indicates something like degeneracy of constitution, and they are seldom very large-sized.

In the choice of store-birds some care is requisite; the stock should be of a good sort; the black Norfolk race is an excellent sort, probably produced originally by a cross with the wild breed of America.

Early in spring, generally speaking, the female commences laying; she indicates her intention by a peculiar cry, by strutting about with an air of self-satisfaction, and often by prying into out-of-the-way places. She should now be closely watched, and some management is required to induce her to lay in the place desired.

The nest should be prepared of straw and dried leaves; it should be secluded; and to excite her to adopt it, an egg, or a piece of chalk cut into the form of an egg, should be placed in it. When her uneasiness to lay is evident, and symptoms prove that she is ready, she should be confined in the shed, barn, or place in which her nest (in a large wicker basket) is prepared, and let out as soon as the egg is laid. It is generally in the morning that the turkey-hen lays, and mostly every other day, though some lay daily, until the number of eggs amounts to from fifteen to twenty. As the eggs are laid, it is as well to remove them (leaving the decoy egg or piece of chalk) until the number is complete; as they are liable to be broken, or to be sucked by rats or weasels. They may then be restored to her for incubation. The turkey-hen is a steady sitter, and in this respect resembles the wild bird; nothing will induce her to leave her nest; indeed, she often requires to be removed to her food, so overpowering is her instinctive affection. She must be freely supplied with water within her reach; should she lay any eggs after she has commenced incubation, these should be removed: it is proper, therefore, to mark those which were given to her to sit upon. The hen should on no account be rashly disturbed; no one except the person to whom she is accustomed, and from whom she receives her food, should be allowed to go near her, and the eggs, unless circumstances imperatively require it, should not be meddled with.

On the twenty-sixth day, according to some on whom dependence may be placed (the thirty-first according to others), the chicks leave the eggs.

The treatment of the chick now requires attention. As in the case of young fowls, the turkey chicks do not require food for several hours. It is useless to cram them, as some do, fearing lest they should starve; and besides, the beak is as yet so tender that it runs a chance of being injured by the process. When the chicks feel an inclination for food, nature directs them how to pick it up. There is no occasion for alarm, if for many hours they content themselves with the warmth of their parent, and enjoy her care only. Yet some food must be provided for them, and this should be, of course, suited to their nature and appetite. Here, too, let the simplicity of nature be a guide. We say this, because some have recommended spices, wine, and even bathing in cold water.

The first diet offered to turkey chicks should consist of eggs boiled

hard and finely minced, or curd with bread crumbs, boiled nettles, and the green part of onions, parsley, etc., chopped very small, and mixed together, so as to form a loose crumbly paste. Barley or oatmeal, kneaded with a little water, and mixed with the pulp of potatoes and Swedish turnips, to which chopped beet-leaves are added, may also be given. They will require water; but this should be put into very shallow vessels, so as to insure against the danger of the chicks getting wet. Fresh milk is apt to disagree with the young birds, and is not needful. Both the turkey-hen and her chickens should be housed for a few days; they may then, if the weather be fine, be allowed a few hours' liberty during the day; but should a shower threaten, they must be put immediately under shelter. This system must be persevered in for three or four weeks. By this time they will have acquired considerable strength, and will know how to take care of themselves. On the first drops of a shower, they will run for shelter into their accustomed place of refuge, which should be warm and waterproof. As they get older, meal and grain may be given them more freely. They now begin to search for insects, and to dust their growing plumage in the sand. At the age of about two months, or perhaps a little more, the males and females begin to develop their distinctive characteristics. In the young males the carunculated skin of the neck and throat, and the horn-like contractile comb on the forehead, assume a marked character. This is a critical period. The system requires a full supply of nutriment, and good housing at night is essential. Some recommend that a few grains of cayenne pepper, or a little bruised hempseed, be mixed with their food. The distinctive sexual marks once fairly established, the young birds lose their names of *chicks* or *chickens*, and are termed *turkey poults*. The time of danger is over, and they become independent, and every day stronger and more hardy. They now fare as the rest of the flock, on good and sufficient food, if their keeper is alive to his own interest. I again repeat it, that a man who keeps poultry on meagre, spare, un-nutritious diet, will never rear fine poultry, and never repay himself even for his niggardly outlay. Poultry should never be in bad condition: let them not be kept at all, unless they are kept properly.

**THE WILD TURKEY** is a noble bird, far exceeding its domestic relative in neatness of form and beauty. Crosses in America often take place between the wild and tame races, and are highly valued, both for external qualities and for the table. In districts where the wild turkey is common, such crosses are quite frequent; the wild male driving away his domesticated rival, and usurping the sultanship of the seraglio. Eggs of the wild turkey have frequently been taken from their nests, and hatched under the tame hen. The young preserve a portion of their uncivilized nature, and exhibit some knowledge of the difference between themselves and their foster-mother, roosting apart from the tame ones, and in other respects showing the force of hereditary disposition. The domesticated young reared from the eggs of the wild turkey are often employed as decoy-birds to those in a state of nature. Mr. William Bloom, of Clearfield, Pennsylvania, caught five or six wild turkeys when quite chickens, and succeeded in rearing them. Although sufficiently tame to feed with his tame turkeys, and generally associate with them,

yet they always retained some of their original propensities, roosting by themselves, and higher than the tame birds, generally on the top of some tree, or on the house. They were also more readily alarmed. On the approach of a dog they would fly off, and seek safety in the woods. On an occasion of this kind, one of them flew across the Susquehanna, and the owner was apprehensive of losing it. In order to recover it, he sent a boy with a tame turkey, which was released at the place where the fugitive had alighted. This plan was successful. They soon joined company, and the tame bird induced his companion to return home. Mr. Bloom found occasion to remark that the wild turkey will thrive more and keep in better condition than the tame turkey, on the same quantity of food.

The native country of the wild turkey extends from the northwestern territory of the United States to the Isthmus of Panama, south of which it is not to be found, notwithstanding the statements of authors, who have mistaken the curassow for it. In Canada, and the now densely-peopled parts of the United States, wild turkeys were formerly very abundant, but, like the Indian buffalo, they have been compelled to yield to the destructive ingenuity of the white settlers, often wantonly exercised, and seek refuge in the remotest parts of the interior. Although they relinquish their native soil with slow and reluctant steps, yet such is the rapidity with which settlements are extended, and condensed over the surface of this country, that we may anticipate a day, at no distant period, when the hunter will seek the wild turkey in vain.

The wooded part of Arkansas, Louisiana, Tennessee, and Alabama; the unsettled portions of the states of Ohio, Kentucky, Indiana, and Illinois; the vast expanse of territory northwest of these states, on the Mississippi and Missouri, as far as the forests extend, are more supplied than any other parts of the Union with this valuable game, which forms an important part of the subsistence of the hunter and traveler in the wilderness. It is not probable that the range of this bird extends to or beyond the Rocky Mountains. The Mandan Indians, who a few years ago visited the city of Washington, considered the turkey one of the greatest curiosities they had seen, and prepared a skin of one to carry home for exhibition.

In Florida, Georgia, and the Carolinas, the wild turkey is not common, and still less so in the western parts of Virginia and Pennsylvania. Some, however, are said to exist in the mountainous districts of Sussex county, New Jersey.

The wild turkey is irregularly migratory, as well as irregularly gregarious. Whenever the forest fruits (or mast) of one portion of the country greatly exceed those of another, thither are the turkeys insensibly led, by gradually meeting in their haunts with more fruit, the nearer they advance toward the place in which it is most plentiful. Thus, in an irregular manner, flock follows flock, until some districts are deserted, while others are crowded with an influx of arrivals. "About the beginning of October," says Audubon, "when scarcely any of the seeds and fruits have fallen from the trees, these birds assemble in flocks, and gradually move toward the rich bottom-lands of the Ohio and Mississippi. The males, or, as they are more commonly called, the *gobblers*, associate

in parties of from ten to a hundred, and search for food apart from the females; while the latter are seen either advancing singly, each with her brood of young, then about two-thirds grown, or in union with other families, forming parties, often amounting to seventy or eighty individuals, all intent on shunning the old cocks, which, when the young birds have attained this size, will fight with and often destroy them by repeated blows on the head. Old and young, however, all move in the same course, and on foot, unless their progress is interrupted by a river, or the hunter's dog force them to take wing.

"When they come upon a river, they betake themselves to the highest eminences, and there remain often a whole day, and sometimes two, as if for the purpose of consultation. During this time the males are heard gobbling, calling, and making much ado, and are seen strutting about, as if to raise their courage to a pitch befitting the emergency. Even the females and young assume something of the same pompous demeanor, spread out their tails, and run round each other, purring loudly, and performing extravagant leaps. At length, when the weather appears settled, and all around is quiet, the whole party mount to the tops of the highest trees, whence at a signal, consisting of a single cluck, given by a leader, the flock takes flight to the opposite shore. The old and fat birds easily get over, even should the river be a mile in breadth, but the younger and less robust frequently fall into the water—not to be drowned, however, as might be imagined; they bring their wings close to their bodies, spread out their tails as a support, stretch forward their necks, and striking out their legs with great vigor, proceed rapidly toward the shore; on approaching which, should they find it too steep for landing, they cease their exertions for a few moments, float down the stream till they come to an accessible part, and by a violent effort generally extricate themselves from the water. It is remarkable that, immediately after crossing a large stream, they ramble about for some time as if bewildered. In this state they fall an easy prey to the hunter.

"When the turkeys arrive in parts where the mast is abundant, they separate into smaller flocks, composed of birds of all ages and both sexes, promiscuously mingled, and devour all before them. This happens about the middle of November. So gentle do they sometimes become after these long journeys, that they have been seen to approach the farm-houses, associate with the domestic fowls, and enter the stables and corn-cribs in quest of food. In this way, roaming about the forests, and feeding chiefly on mast, they pass the autumn, and part of the winter."

The season of courtship begins about the middle of February. The females now separate from the males, whom they endeavor to shun, but by whom they are perseveringly followed.

It is generally about the middle of April that the female begins to select a site, and arrange her rude nest, which consists chiefly of withered leaves, in some depression on the ground, amidst dense brushwood, or in such an obscure place as the locality affords. The eggs, like those of the domestic bird, are of large size, and of a dull cream-white, minutely freckled or dotted with reddish-brown; their average number

varies from ten to fifteen. While the gradual addition of egg to egg is going on, the hen displays surprising instinctive caution. On leaving her charge, she is careful to cover the whole with dry leaves, so artfully disposed as to render it difficult, even for one who has watched her movements, to find the nest; and on returning to it she varies her rout, scarcely ever returning to it twice by the same course. Hence it is mostly by accident that the nest of the hen is discovered. It not unfrequently happens that several hens associate together and form a common nest, probably for mutual aid and assistance, and rear their broods together. Audubon says that he once found three hens sitting on forty-two eggs. In such cases one of the females at least is ever on guard, no raven or crow then daring to invade the nest. While in the act of incubation, the hen is not readily driven from her nest by the appearance of danger. A person walking carelessly along as if taking no particular notice, may pass a nest within five or six paces, the female crouching low to avoid observation; but, as Mr. Audubon has ascertained, if a person make his approach in a stealthy searching manner, she will quit it while he is yet thirty yards distant, and assuming a stately gait, will move away, uttering every now and then a clucking note, probably hoping by this means to draw off the intruder and baffle his search. The same writer says that the hen seldom or never abandons her nest if it has been discovered by man, but that if a snake or any other animal has sucked any of the eggs, she leaves it altogether. Under such circumstances, or when the eggs have been removed, she seeks the male, and recommences the preparation of another nest; but, as a rule, she lays only a single batch of eggs during the season. When the eggs are on the eve of hatching, the female will not leave her nest under any circumstances while life remains; she will even allow an inclosure to be made around her, and thus be, as it were, imprisoned, rather than seek her own safety by flight.

Before leaving the nest with her young brood, the female shakes herself, adjusts her plumage, and appears roused to the exigencies of the occasion; she glances upward and around her, in the apprehension of enemies, and as she moves cautiously along, keeps her brood close about her; her first excursion is generally to a little distance only from the nest, to which she returns with her brood at night. Subsequently they wander to a greater distance, the hen leading her charge over dry undulating grounds, as if aware of the danger of damp and humid spots. Wet, indeed, is fatal to young turkeys while covered only with down; hence, in very rainy seasons the brood becomes greatly thinned, for the young, if once completely wetted, seldom recover; their vital energies sink under the abstraction of caloric during evaporation.

At the age of a fortnight, the young birds begin to use their wings; hitherto they have rested on the ground, but now they begin to roost on the low branch of some large tree, crowding close to each side of the mother, and sheltered beneath her broad wings. They now wander about more freely, visiting the glades and open lands bordering the woods, in search of wild strawberries and other fruits, grasshoppers, the larvæ of ants and other insects; and roll themselves in the sand and

dust, in order to clear their glowing feathers of loose scales and parasitic vermin: deserted ants' nests are favorite dusting-places.

By the month of August, the young birds acquire considerable growth, and use their wings and legs with great vigor and readiness, so that they are able to escape the sudden attack of foxes, lynxes, and other beasts of prey, by rising quickly from the ground and mounting the tallest branches of trees. The young cocks now begin to show their distinctive characteristics, and even to utter an imperfect gobble, while the young hens pur and leap. Several broods flock together, and so continue united, till after the October migration, and through the winter, when the males leave the females.

Turkeys, though extremely delicate in their infancy, become very hardy, and, if permitted, will roost on the highest trees, in the cold dry nights of winter, without suffering injury. The hen, which lays many eggs early in spring, sits thirty days, and covers from twelve to fifteen eggs. It is unnecessary for the turkey cock, as is the case with gallinaceous fowl, to be in constant intercourse with the hen during her period of laying. Two visits from him in that season are sufficient to impregnate all the eggs. She is a very steady sitter, and must be removed to her food and supplied with water, for she would never leave her nest. She wants the alertness and courage and sagacity of the common hen, and might be called a fool with much more propriety than the goose, which is an intelligent bird. The turkey hen is incapable of teaching her young ones how to pick up their food, on which account a poultry-maid should always attend them until they are reared.

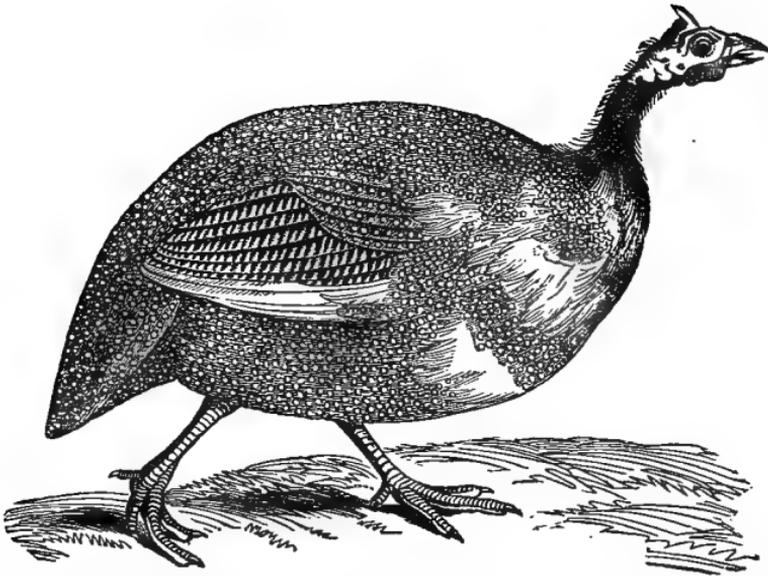
The author of "*Tabella Cibaria*" proves it upon the bird that it is "so stupid or timorous that if you balance a bit of straw on his head, or draw a line of chalk on the ground from his beak, he fancies himself loaded, or so bound that he will remain in the same position till hunger forces him to move. We made the experiment." We never did; but we doubt it not, though we cannot accept it as a proof of stupidity. How much wit may be necessary to balance a straw may be doubtful; but gallant chanticleer has never been charged either with fear or folly, and yet you have only to take him from his perch, place him on the table by candle-light, hold his beak down to the table, and draw a line with chalk from it, so as to catch his eye, and there the bird will remain spell-bound, till a bystander, rubbing out the line, or diverting his attention from it, breaks the charm. Many a fowl have we fascinated in our boyish days.\*

**The Guinea-Fowl.**—The Guinea-fowl is slightly larger than the ordinary barn-door fowl, but is inferior in size to the larger foreign breeds, as the Malay and Spanish; in both aspect and character it appears to occupy a position between the pheasant and the turkey. Although long familiarized, the Guinea-fowl has never been fully domesticated, still retaining much of the restlessness and shyness of its primitive feral habits. It is very courageous, and will not only frequently attack the turkey, but even prove victorious in the encounter.

The cock and hen are so nearly alike, that it is not easy to distin-

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\* "*Tabella Cibaria*."



THE GUINEA-FOWL.

guish them; there is sometimes a difference of hue in certain parts; but this difference only occurs occasionally, and indeed it is on gait, voice, and demeanor that we must chiefly depend. It must be remarked that they pair; therefore a second hen will be neglected and useless except for eggs.

Like all the gallinaceous birds, the Guinea-fowl is esteemed for its flesh and its eggs, which, though smaller than those of the common fowl, are very excellent and numerous, the hen commencing to lay in the month of May, and continuing during the entire summer. After the pheasant season, young birds of the year are, on the table, by no means unworthy substitutes for that highly-prized game. Such birds are acceptable in the London market, and fetch a fair price. The Guinea-fowl is of a wild, shy, rambling disposition; and, domesticated as it is, it pertinaciously retains its original habits, and is impatient of restraint. It loves to wander along hedgerows, over meadows, through clover or corn fields, and amidst copses and shrubberies; hence these birds require careful watching, for the hens will lay in secret places, and will sometimes absent themselves entirely from the farm-yard until they return with a young brood around them. So ingeniously will they conceal themselves and their nest, so cautiously leave it and return to it, as to elude the searching glance of boys well used to bird-nesting; but it may always be found from the watchful presence of the cock while the hen is laying. There is one disadvantage in this, the bird will sit at a late period, and bring forth her brood when the season begins to be too cold for the tender chickens. The best plan is, to contrive that the hens shall lay in a quiet secluded place, and to give about twenty of the earliest eggs to a common hen ready to receive them, who will perform the duties of incubation with steadiness. In this way a brood in June may be easily obtained. The young must receive the

same treatment as those of the turkey, and equal care; they require a mixture of boiled vegetables, with curds, farinaceous food, as grits, barley-meal, etc.; they should be induced to eat as often and as much as they will. In a short time they begin to search for insects and their larvæ; and with a little addition to such fare as this, and what vegetable matters they pick up, will keep themselves in good game condition, without cramming or overfeeding. For a week or two before being killed for the table, they should have a liberal allowance of grain and meal.

Guinea-fowls mate in pairs; overlooking this circumstance frequently occasions disappointment in the broods. The period of incubation is twenty-six days. Though they are not unprofitable birds, as they are capable of procuring almost entirely their own living, they are rejected by many on account both of their wandering habits, which give trouble, and their disagreeable voice, resembling the noise of a wheel turning on an ungreased axle-tree.

**THE PEA-FOWL.**—A peacock in full feather, parading on a green lawn, or from the extremity of a terrace-wall, displaying the full length of his gorgeous tail, is one of the most beautiful living additions to garden landscape. But of fruit he will prove a devourer, not to be guarded against, and both he and his mate are not unfrequently murderous assassins of the young of other fowl.

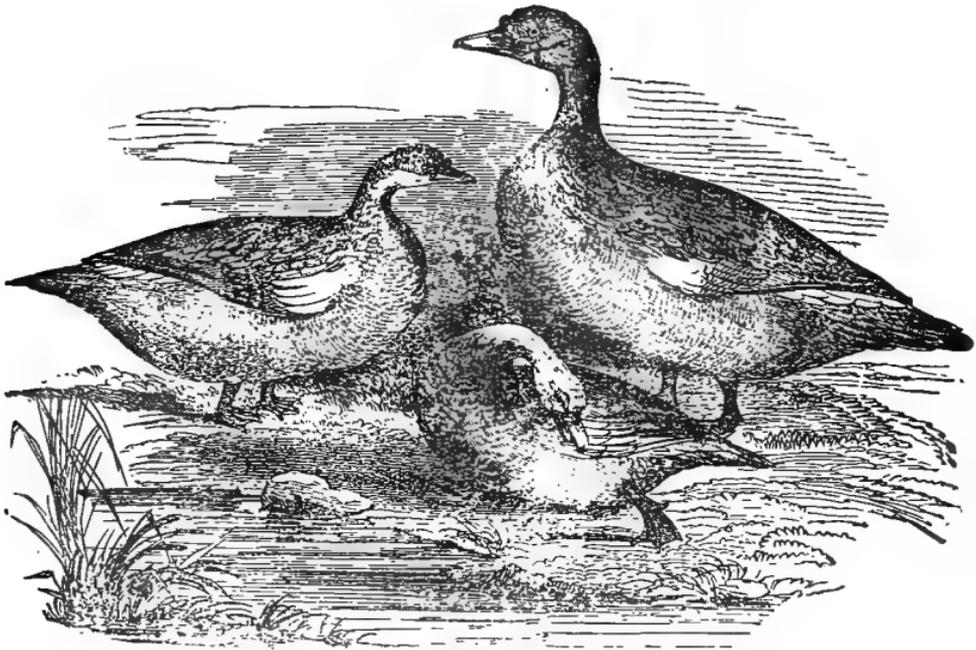
In domestication it is a rambling bird, unsuited to confined premises; it requires lawns, shrubberies, and wide pleasure-grounds, to which it is an appropriate ornament, whether it moves about with its tail expanded, or walks trailing it along down avenues of smooth turf, or amongst the woodland glades. Semi-wild as the peacock is, it is disposed to become familiar, and if encouraged will visit the windows of the house, in order to receive an accustomed dole of bread, and when displaying its plumage seems to be aware of the admiration it inspires.

Grain of various kinds, mast, fruits, insects and their larvæ, together with small reptiles, constitute its food. It is not until the third year that the male acquires his glorious plumage; the aigrette on the head in this species (but not in the Japan peafowl) is composed of miniature plumes similar to those of the train. The tarsi are spurred, and when irritated, the peacock can use them with full effect.

For roosting, the peacock affects still higher branches than the turkey, and, failing these, the gable end of a house or barn, or some elevated situation; and here, through summer and winter will it take its station, defying the rain and the cold. Strange that a bird originally from India should be so hardy! It would seem as if Providence had expressly given to the gallinaceous birds that quality of constitution which fits them for accompanying man into regions far remote from their natural *habitat*. Such is the case, indeed, with all animals essentially subservient to his welfare; and we cannot but see in this fact a proof of the wisdom and goodness of that God who commanded man "to replenish the earth and subdue it."

Though the peafowl roosts in trees, the female incubates on the ground, making in her natural state a rude, inartificial nest, in some secluded spot, under cover of the dense jungle. The eggs vary in number from five to ten. This concealment, as in the instance of the tur-

key, is necessary; for, actuated by a strange jealousy, the male will break all the eggs if he discovers them; and this feeling actuates our domestic birds, insomuch that the female, during incubation, must be placed in such security as to prevent the access of the male to the nest. Eggs, grayish white; period of incubation, from twenty-seven to thirty days.



MUSK OR BRAZILIAN DUCKS.

**THE DOMESTIC DUCK.**—Ducks cannot be kept to advantage unless they can have access to water. This need not be in large quantities. A tub, holding a few gallons, set in the ground, and daily renewed, answering for a large flock. They are gross feeders, and excellent “snappers up of unconsidered trifles.” Nothing comes amiss to them: green boiled vegetables, the waste of the kitchen, meal of all sorts made into paste, grains, bread, animal substances, worms, slugs and snails, insects and their larvæ, are all accepted with eagerness. Their appetite is not fastidious; in fact, to parody the line of a song, “they eat all that is luscious, eat all that they can,” and seem determined to reward their owner by keeping themselves in first-rate condition, if the chance of so doing is afforded them. They never need cramming—give them enough and they will cram themselves; yet they have their requirements and ways of their own, which must be conceded. Confinement will not do for them: a paddock, an orchard, a green lane, and a pond; a farm-yard, with barns and water; a common, smooth and level, with a sheet of water, abounding in the season with tadpoles and the larvæ of aquatic insects,—these are the localities in which the duck delights, and in such they are kept at little expense. They traverse the green sward in

Indian file (an instinctive habit still retained), and thus return at evening to their dormitory, or emerge from it to the edge of the pond or sheet of water, over which they scatter themselves; thus also they come to the call of their feeder.

Ducks should always have a lodging-place of their own; they should be separated from fowls, and never housed beneath their perches; yet where fowls are kept, a little contrivance would suffice to make them a comfortable berth in a fowl house. In winter, a thin bedding of straw, rushes, or fern-leaves, should be placed on the floor of their dormitory, and changed frequently. More than four or five females should not be allowed to a single drake. The duck lays a great many eggs in the season; there are instances in which one has laid as many as eighty-five eggs; but these cases are rare; the female will cover with comfort twelve or fourteen, and in most cases is a steady sitter. When she inclines to sit, give her a plentiful nest, with some broken straw or hay near at hand, with which to cover the eggs when she leaves them; as nature instructs her to use this precaution, no doubt it is best to give her the opportunity. Let her be supplied with food and water directly she leaves her nest; and if she choose to take a bath it will do no harm. It is common to put ducks' eggs under hens, and it is ludicrous, though somewhat painful, to see the trepidation and anxiety of the foster-mother on the edge of a pond, into which the young ducks have plunged, regardless of her feelings and incessant clucking, a language they do not understand. At what age young wild ducks are taken by their parents into the water we cannot say; but this is certain, that if young tame ducks visit the water too early, they are very apt to become cramped and perish. If very young ducklings once become *saturated* with water, they invariably perish; they are in this respect as tender as young turkeys. Ducks, although they float on the water, never become wet (that is, when properly fledged), for their plumage throws off the fluid, and they return dry from the pond; but ducklings, while yet in the down, get wet, and should therefore have sparing access to water until the feathers supply the place of the early down. Young ducks are easily reared, being fed on meal mixed with potatoes and green meat boiled; they are useful in gardens, which they clear of slugs and snails, without injuring the crops of vegetables. As a caution, we would here observe, that the ponds to which they are allowed access should contain neither pike nor eels; and rats should be extirpated. Rats and weasels often thin flocks of ducklings, to the great loss and vexation of their owner.

The Varieties of the Domestic Duck, are the *White Aylesbury*, large, plumage perfectly white; feet yellow, and a flesh-colored bill. This is one of the best varieties: The *Rouen duck*, a large dark-colored variety, is also highly esteemed. The *Hook-billed*, remarkable for the peculiar form of its beak. The *Penguin duck*, which walks, or waddles in an upright position, like the penguin; the *Musk duck*, so termed from the strong scent of musk which its skin exhales. This duck is of large size, and its plumage of a glossy blue-black. The *East Indian*, or *Buenos Ayres duck*, is a small and very beautiful variety, black, with a brilliant metallic luster on the feathers. These, and the various colored call-ducks, are highly ornamental.

The egg of the duck is by some people very much relished, having a rich piquancy of flavor, which gives it a decided superiority over the egg of the common fowl; and these qualities render it much in request with the pastry-cook and confectioners—three duck eggs being equal in culinary value to six hen eggs. The duck does not lay during the day, but generally in the night; exceptions regulated by circumstances, will, of course, occasionally occur. While laying, the duck requires more attention than the hen, until she is accustomed to resort to a regular nest for depositing her eggs—once, however, that this is effected, she will no longer require your attendance.

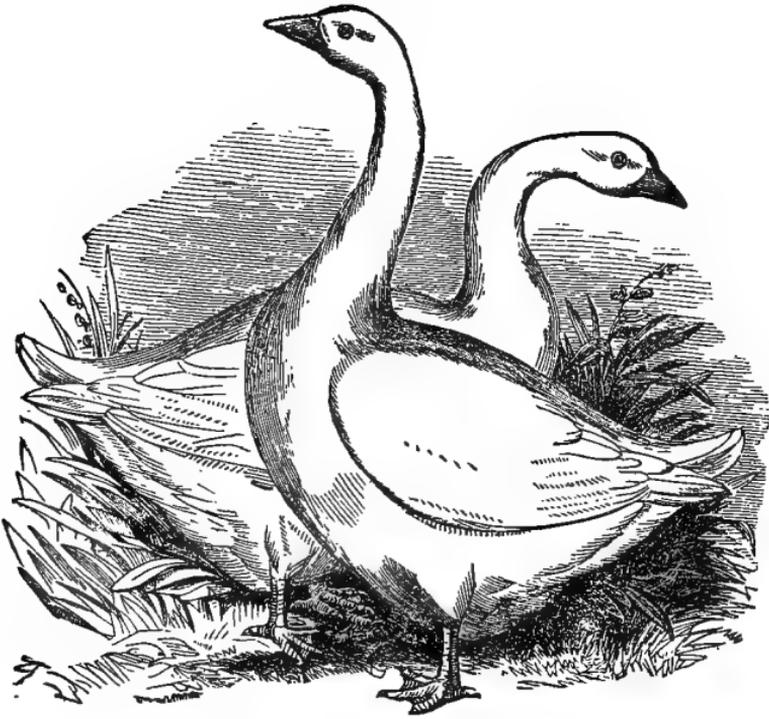
**THE DOMESTIC GOOSE.**—The best variety of the domestic goose is that which varies least in color. Gray is the best color. Mixed colors should be rejected.

As to breeding geese. These birds, as has been ascertained by M. St. Genis, will pair like pigeons; and even if the number of ganders exceeds that of the geese, no noise or riot takes place, mutual choice being evidently the ruling principle. Amongst other experiments tried by M. St. Genis, he left, besides the patriarch of the flock, two of the young ganders, unprovided with mates, but still those couples that had paired kept constantly together, and the three single ganders never attempted to approach any of the females during the temporary absence of their lords. M. St. Genis also remarked, in the course of his observations, that the gander is more frequently white than the goose.

The goose deposits from ten to twenty eggs at one laying; but, if you do not desire her to sit, you may, by removing the eggs as fast as they are laid, and at the same time feeding her highly, induce her to lay on from forty-five to fifty. This is, however, unusual, and it is unprofitable. When tolerably well cared for, geese may be made to lay, and even hatch, three times in the year. This care consists merely in high feeding and good housing early in the spring, so as to have the first brood early in March; but we would rather have two good broods reared than three bad ones, and we are, therefore, more disposed to recommend patience and moderation.

The goose will, when left to the unassisted promptings of nature, begin to lay about the latter end of February, or the beginning of March. The commencement of the laying may be readily foreseen by marking such geese as run about carrying straws in their mouth. This is for the purpose of forming their nest, and these individuals are about to lay. They should, then, of course, be watched, lest they drop their eggs abroad. Once a goose is shut up, and compelled to lay her first egg of that laying in any particular nest, you need be at no further trouble about her; for she will continue to lay in that spot, and will not stray on any account elsewhere.

We can always detect the inclination of the goose to sit or hatch. This is known by the bird keeping in the nest after the laying of each egg longer than usual. The hatching nest should be formed of straw, with a little hay as a lining; and so formed that the goose will not fling the eggs over the side when in the act of turning them. You need not banish the gander; on the contrary, let him remain as near the nest as he chooses; he will do no mischief, but will act the part of a most vigi-



EMBDEN OR BREMEN GESE.

lant guardian. About fifteen eggs will be found as many as a good-sized goose can properly cover. Do not meddle with the eggs during the incubation, and do not meddle with the goose; but, as she is somewhat heavier than the hen, you may leave her food and drink rather nearer to her than is necessary with common poultry, as, if she chanced to absent herself from the eggs sufficiently long to permit them to cool, she might become disheartened, and desert her task altogether. It is, however, unnecessary to put either vinegar or pepper in her food or water, as recommended by some, or, in short, to meddle with her at all.

The goose will sit on her eggs for nearly two months; but the necessary period of incubation being but one, the early hatched goslings must be removed lest the more tardy might be deserted. About the twenty-ninth day the goslings begin to chip the shell; and if their own powers prove inadequate to their liberation, aid may be rendered them, and that, also, with much less risk than in the case of other young birds, the shell and its membranes being very hard and strong, and the young themselves also hardy, and capable early of enduring hardship. The best plan is to have the eggs set, of as nearly as possible equal freshness, that they may be hatched at one time.

On first being hatched, turn the goslings out into a sunny walk, if the weather will permit of such procedure; but do not try to make them feed for, at least, twelve hours after leaving the shell. Their food may then be bread soaked in milk, porridge, curds, boiled greens, or even bran, mixed with boiled potatoes, taking care not to give the food

in too hot a state, while you equally avoid giving it cold. Avoid rain or cold breezes; and see, therefore, that the walk into which you turn the young goslings be sheltered from both wind and weather. The goslings should also be kept from water for at least a couple of days after hatching. If suffered too early to have free access to water, they are very liable to take cramp—a disease which generally produces permanent lameness and deformity, and but too frequently proves fatal.

Geese should have an inclosed court or yard, with houses in which they may be shut when occasion requires. It is better, however, to confine them as little as possible; and, by suffering them to stroll about, and forage for themselves, the expense of rearing them will fall comparatively lightly on you, so that you will not be conscious of any outlay. Geese require water, and cannot be advantageously kept when they cannot have access to it; still, however, we have known them to thrive where they had no access to any pond or river, but had only a small artificial pool, constructed by their owners, in which to bathe themselves. When geese are at all within reach of water, they will, when suffered to roam at liberty, usually go in search of, and discover it, and will, afterward, daily resort thither. Though the birds are thus fond of water, all damp about their sleeping places must be scrupulously guarded against. Grass is as necessary to the well-being of geese as water; and the rankest, coarsest grasses, such as are rejected by cattle, constitute the goose's delicacy.

**THE WILD GOOSE.**—Canada Goose, or Cravat Goose (*Anser Canadensis*), *Neeseash* and *Mistehayneeseah* of the Cree Indian, *Wild Goose* of the Anglo-Americans. Hearne, Wilson, Audubon, Bonaparte, and others have given us full accounts of the habits and manners of the Canada goose in a state of nature. It is the common wild goose of the United States, and its regular periodical migrations are the sure signals of returning spring, or of approaching winter. The tracts of their vast migratory journeys are not confined to the sea-coast or its vicinity, for, in their aerial voyages to and from the north, these birds pass over the interior on both sides of the mountains, as far west, at least, as the Osage River. "I have never," says Wilson, "yet visited any quarter of the country where the inhabitants are not familiarly acquainted with the regular passing and repassing of the wild geese." It is an opinion in the states that they visit the lakes to breed. Most, however, it would appear, wing their way much farther northward, for from the Canadian lakes they migrate to still higher latitudes on the setting in of spring. Hearne saw them in large flocks within the arctic circle, pushing their way still northward. Captain Phipps observed them on the coast of Spitzbergen, in latitude  $80^{\circ} 27' N$ . Audubon found them breeding on the coast of Labrador, and states that the eggs, six or seven in number, of a greenish white, are deposited in a roughly made nest. Bonaparte states that they breed everywhere throughout the Hudson's Bay territory, and have been observed in the middle of July on the Copper-mine river, not far from its debouchure, accompanied by their newly-hatched young. The cry of the species is imitated by a nasal repetition of the syllable *wook*, or, as Wilson writes it, *honk*.

The destruction of the Canada geese during their migrations is enor-

mous: the autumnal flight lasts from the middle of August to the middle of October; those which are taken in this season, when the frosts begin, are preserved in their feathers, and left to be frozen for the fresh provisions of the winter stock. The feathers constitute an article of commerce, and are sent to England. The vernal flight of these geese lasts from the middle of April until the middle of May. Their arrival in the fur countries from the south is impatiently expected; it is the harbinger of spring, and the month is named by the Indians the goose-moon. Dr. Richardson, in his *Fauna Boreali-Americana*, describes as follows the interest caused by the appearance of the flocks:—"The arrival of this well-known bird is anxiously looked for and hailed with great joy by the natives of the woody and swampy districts, who depend principally on it for subsistence during the summer. It makes its first appearance in flocks of twenty or thirty, which are readily decoyed within gunshot by the hunters, who conceal themselves and imitate its call. Two, three or more are so frequently killed at a shot, that the usual price of a goose is the single charge of ammunition. One goose, which when fat weighs about nine pounds, is the daily ration of one of the Company's servants during the season, and is reckoned equivalent to two snow-geese (*Anas hyperborea*), or three ducks, or eight pounds of buffalo and moose-meat, or two pounds of pemmican, or a pint of maize and four ounces of suet.

"About three weeks after their first appearance, the Canada geese disperse in pairs throughout the country, between the fiftieth and sixty-seventh parallels, to breed, retiring at the same time from the shores of Hudson's Bay. They are seldom or never seen on the coasts of the arctic sea. In July, after the young birds are hatched, the parents moult, and vast numbers are killed in the rivers and lakes, when (from the loss of their quill feathers) they are unable to fly. When chased by a canoe, and obliged to dive frequently, they soon become fatigued, and make for the shore with the intention of hiding themselves; but as they are not fleet, they fall an easy prey to their pursuers. In the autumn they again assemble in flocks on the shores of Hudson's Bay for three weeks or a month previous to their departure southward."

The Canada goose feeds on aquatic vegetables and their roots, and delicate marine plants of the genus *ulva*. To this diet they add grain and berries in their season.

The flight of this species is laborious and heavy, and generally in single file, or in the form of two sides of a triangle, the leader, some old gander, being the *apical* bird. From time to time this leader utters his deep "honk," which is responded to by the rest of the flock, and which may be translated, "What cheer, ho?" "All's well!" Very often, however, all is not well, for the line is scattered by the fire of the gunner; often, too, they meet with dense fogs, in which they become bewildered, and after wheeling about alight on the ground, where the gunners give them a warm reception. In some districts the sportsmen take with them into the marshes one or two of the domesticated race, which by their call attract the flocks passing overhead; and allure them to destruction.

Wilson says that, except in calm weather, the flocks of Canada geese

rarely sleep on the water, generally preferring to roost all night in the marshes. When the shallow bays are frozen, they seek the mouths of inlets near the sea, occasionally visiting the air-holes in the ice; but these bays are seldom so completely frozen as to prevent them feeding on the bars at the entrance.

The Canada goose is a beautiful species, and its flesh is excellent. The head, two-thirds of the neck, the greater quills, the rump, and tail are perfectly black; the back and wings brown, edged with wood-brown; the base of the neck anteriorly, and the under plumage generally, brownish gray; a few white feathers are scattered about the eye, and a white cravat of a kidney shape forms a conspicuous mark on the throat; upper and under tail coverts pure white; bill and feet black. Such is a brief sketch of the Canada goose in a state of nature. Man, however, has appreciated its value, and it is kept domesticated not only in America, but in many parts of Europe where it breeds freely. In America the ordinary gray goose of Europe is very common; but this bird does not thrive there so well as in Europe; hence many prefer the Canada goose, which is as familiar, and its equal in other points.

This species will breed with the common goose; and it is asserted that the hybrid progeny is far superior in the flavor and sapidity of its flesh to the unmixed progeny of the common goose. Buffon, in whose time the Canada goose was kept in a domestic state in France, says: "Within these few years many hundreds have inhabited the great canal at Versailles, where they breed familiarly with the swans." That is, we suppose, interbreed with the swans, an instance of which has not come under our own notice; the intermediate position, however, of this species renders the fact probable.

Like the duck and the common goose, the Canada goose under domestication ceases to be as strictly monogamous as it is in its wild state—a circumstance which, in our tame *anatidæ*, may result from the plan of keeping but few males, and these in association with a flock of females, so that the ordinary results of pairing—that is, retiring from the rest to a secluded spot, which the mated pair exclusively occupy—are interfered with. Yet, as may be seen in the instance of the common goose, the male generally attaches himself to a particular female, while she is followed by her brood of goslings over the common, and is energetic in their defense. The instinct is not quite obliterated—there is a reigning sultana.

It is a question worth attention, whether the Canada goose might not with advantage be more extensively kept in our country than it is at present; it is common as an *ornament* to sheets of water in parks, gardens, and pleasure grounds, but is too much neglected as a bird of *utility*; it is alike valuable for flesh and feathers; it is not so decided a grazer as is the common goose; the precincts of marshes and ponds which abound in aquatic vegetation, for the procuring of which its strong bill and long swan-like neck afford it facility, offer the most advantageous sites for its establishment, and in such localities we strongly recommend its adoption. With regard to its management little is to be said; the sitting females require secluded nests, free from intrusion; and the flock, in addition to the vegetables they pick up, require an allowance of grain.

Like most birds known both in a wild and domestic state, the latter exceed the former in weight and magnitude.

**FEEDING POULTRY.**—It is a bad practice to under feed poultry. From the very first they should have good and solid food. Steamed potatoes and other roots mixed with meal of the various grains, form a cheap and excellent food. It is not necessary to soak, grind, or boil the grains for fowls, however, where they can have free access to pebbles to supply their own grinding-mills, by which they turn their own grain into flour. But when pent up and unable to procure what they so much need, meal, and boiled and crushed food should then be given them. The poultry-house, however, should be constantly supplied with fine gravel, lime, and pulverized charcoal—articles indispensable to the health and improvement of fowls. Green food should be given them daily. Cabbages hung where the fowls can pick at them are a good article. In winter, chopped potatoes, turnips, etc., are the only convenient green food. When practicable, fresh animal food should be frequently given fowls that are shut up, or at seasons when they cannot procure insects or worms. A bullock's liver, thrown in the yard, is a cheap and good food for them. Indian corn is an excellent food, and may be freely given.

Cayenne pepper, indeed all descriptions of pepper, especially the cayenne in pods, will be found a favorite with fowl, and will be greedily devoured by them; it acts as a powerful stimulant, and remarkably promotes laying; and, when mixed in a ground state with boiled meal, will be found productive of the best effects. In this, however, as in every thing else, let moderation be your ruling principle.

A different system should be adopted in treating poultry for the table, and for the laying and breeding department.

With regard to feeding fowls for the table, much depends on circumstances. Spring chickens may be put up for feeding as soon as the hen ceases to regard them, and before they lose their first good condition. In their fattening-pens they will have no opportunity of picking up little pebbles; their mills, therefore, will be inoperative, and the diet must consequently be pultaceous, viz., bread and milk, barley-meal, or oatmeal and milk, and meal of steamed potatoes mixed with barley-meal. Some recommend the occasional addition of a few grains of cayenne pepper, or of dried nettle-seeds, which the foreign feeders are in the habit of giving. Where chickens have the run of a good farm-yard, and plenty of food, it is a work of supererogation to pen them for fattening; they will be ready at any time for the table, and their flesh, being in its healthy state, will be sweet and juicy, delicately tender, and sufficiently fat. Some, indeed, prefer fatted fowls; but this is a matter of taste; to many the greasy fat of poultry is very disgusting.

The practice of cramming poultry by the hand is quite common, though not to be recommended. In France they have machines by which one man can cram fifty birds in half an hour. It is somewhat on the principle of a forcing-pump. The throats of the birds are held open by the operator until they are gorged through a pipe, which conveys the food from a reservoir below placed on a stool. In fifteen days, fowls are said to attain the highest state of fatness and flavor by this feeding. In addition to the ordinary paste of barley-meal, or meal made

into little balls with milk, the dried seeds and leaves of nettles have been recommended by the continental poulterers, some of whom give a little henbane-seed to induce sleep, while others put out the eyes of the prisoners as the most effectual way of keeping them in a state of darkness, which is considered essential to their becoming rapidly fat; and under the pretext of relieving them from the irritation of vermin, they pluck the feathers from their heads, bellies, and wings. While fowls are thus preparing for the knife, though their bodies are closely confined, their hinder parts are free for evacuation and cleanliness, and their heads are at liberty to take in fresh supplies of nutriment.

Poultry are the better for high feeding from the very shell, and on this account the heaviest corn is often far cheaper for them in the end than tailings, as regards the flesh, or the size and substantial goodness of the eggs. Young chickens may be put up for feeding as soon as the hen has ceased to regard them, and before they lose their first good condition. When chickens are wanted for domestic purposes, they are often left at liberty in the farm-yard, and if they have plenty of good food, they will be in the most healthful state for the table, and rich and juicy in flavor.

**POULTRY-HOUSES AND YARDS.**—Those who intend to rear fowls or any kind of poultry on a large scale, should have a distinct yard, perfectly sheltered, and with a warm aspect, well fenced, secure from thieves and vermin, and sufficiently inclined to be always dry, and supplied with sand or ashes for the cocks and hens to roll in, an operation necessary to disengage their feathers from vermin: running water should be especially provided; for the want of water, of which all poultry are fond, produces constipation of the bowels and inflammatory diseases; and for geese and ducks, bathing is an indispensable luxury. A contiguous field is also necessary, for free exercise, as well as for the supply of grubs and grass to the geese. The fowl-house should be dry, well-roofed, and fronting the east or south, and, if practicable, at the back of a stove or stables; warmth being conducive to health and laying, though extreme heat has the contrary effect. It should be furnished with two small lattice windows, that can be opened or shut at pleasure, at opposite ends, for ventilation, which is frequently necessary; and the perches should be so arranged, that one row of roosting fowls should not be directly above another.

M. Parmentier has shown\* by what arrangement a house twenty feet long and twelve feet wide may be made to accommodate one hundred and fifty hens at roost. The plan is simply this: the first roosting-perch (rounded a little at the upper angles only, for gallinaceous fowls cannot keep a firm hold on perfectly cylindrical supporters) should be placed lengthways and rest on trestles in each end wall, six feet from the front wall, and at a convenient height, which must depend on the elevation of the house from the floor, which should be formed of some well consolidated material that can be easily swept. Another perch should be fixed ladder-ways (*en échelon*) above this, but ten inches nearer to the back wall, and so on, until there are four of these perches, like the steps

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\* "Dictionnaire d'Agriculture."

of a ladder when properly inclined, but with a sufficient distance between the wall and the upper one to allow the poultry-maid to stand conveniently upon when she has occasion to examine the nests, which it is her duty to do every day at least once, and in the forenoon. The highest of these she can reach by standing on a stool or step-ladder. By this contrivance the hens, when desirous of reaching the nests, have no occasion to fly, but merely to pass from one stick to another. If the size and form of the house permit, a similar construction may be made on the opposite side, care being taken to leave an open space in the middle of the room, and a sufficiently wide passage for the attendant to pass along the walls. It is not at all required to have as many nests as hens, because they have not all occasion to occupy them at the same time; and besides, they are so far from having a repugnance to lay in a common receptacle, that the sight of an egg stimulates them to lay. It is however true, that the most secluded and darkest nests are those which the hens prefer.

The nests, if built into the wall, are in tiers from the bottom to the top, the lowest being about three feet from the ground, and a foot square. If the laying-chambers consist of wooden boxes, they are usually furnished with a ledge, which is very convenient for the hens when rising.

But the best receptacles for the eggs are those of basket-work, as they are cool in summer, and can easily be removed and washed. They ought to be fastened not directly to the wall, as is generally the case, but to boards fixed in it by hooks, well clinched, and with a little roof to cover the rows of baskets. They will thus be isolated, to the great satisfaction of the hen, which delights in the absence of all disturbing influences when laying. All the ranges of nests should be placed chequer-wise, in order that the inmates, when coming out, may not startle those immediately under: those designed for hatching should be near the ground (where instinct teaches the hen to choose her seat), and so arranged that the hens can easily enter them without disturbing the eggs.

Wheaten or rye straw is the most approved material for the bedding, being cooler than hay: the hens are sometimes so tortured by lice as to forsake their nests altogether, in an agony of restlessness. A Dorking housewife has assured us that she once lost an entire clutch, from having, as she believes, given a bed of hay-seeds to her sitting hen. The chicks were all glued to the shells, and thus destroyed, owing, as she thinks, to the high temperature occasioned by the fermenting seeds.

For all purposes two cocks in a good run are considered in the poultry counties contiguous to London as sufficient for twelve or fourteen hens, but in France they allow twenty mistresses to each cock, which no doubt is on account of the high temperature there. In a confined yard, five hens are sufficient for one cock in our cold country, and a double set will not answer in very limited space. When there are two or more cocks, care should be taken not to have them of equal age or size, for in this case they are always jealous and quarrelsome; if one is decidedly ascendant, the other will never presume to dispute with him. It will be judicious also to avoid the introduction or changing of cocks in the breeding season, for the hens require constant intercourse with them, and several days frequently elapse before they become familiarized with

a stranger. The best way is to bring in the new cock in the summer, either as a chick, or late in the year in the moulting season, when he will not take too much notice of the hens. As a general rule it would be well to have one a yearling and the other a year older. In the third year, the cock, who then becomes lazy and excessively jealous, should be killed.

In selecting eggs for hatching, care should be taken that they are not at the utmost more than a month old, but their condition for hatching will greatly depend upon the temperature of the weather: vitality continues longest when the weather is cool.

It has been asserted that the future sex of the bird is indicated by the shape of the egg; the round producing the female, and the oblong the male. But this is contradicted, and, we believe, with sufficient reason, and it is impossible not only to foretell the sex, but even to ascertain whether the egg be fecundated. This however is certain, that if the air-bag (at the obtuse end), which has been mistaken for the germ, and the purpose of which is to oxygenate the blood of the chick, be perforated even in the least conceivable degree, the generating power is lost altogether. Those eggs only which have been fecundated by the male are possessed of the vital principle. The number of eggs for a hen should not exceed sixteen, as she cannot impart the necessary warmth to more. It is by no means uncommon with experienced breeders to place two hens on the same day on their respective eggs, and then on the twenty-first day when the broods are out, to give the maternal charge of both to one of the hens, removing the other to another set of eggs, which, if she be a steady setter, she will hatch as in the first instance. This, however, must be deemed a cruelty, though some hens would instinctively continue to sit until death. They would, however, become so attenuated by continued sitting, as to lose the power of communicating to the eggs the necessary degree of warmth. The practice of the Surry breeders is to feed the hen on oats while sitting, as less stimulating than barley, which they give to the laying hens on account of this very quality.

**CAPONIZING.**—The making of capons, that is, emasculating the males, is practiced a little in some of the English counties, and very much in France, where the females are also rendered incapable of breeding, and termed in their unsexed condition *poulardes*, in order to give them the tendency to fatten. An incision is made near the parts, and through this the finger is introduced to take hold of and bring away the genitals, but so carefully as not to injure the intestines: the wound is then stitched up and rubbed with oil or grease; and the comb (which appears to be an unnecessary and gratuitous pain and insult to the sufferer) is often cut-off. The females are treated much in the same way, when they do not promise well for laying, or when they have ceased to be fertile; they are deprived of the ovarium. The subsequent treatment is similar to that in the former case. Care is taken to give them good food for three or four days, and during that time to keep them in a place of moderate temperature, to avoid the danger of gangrene, which, considering the time of the year—midsummer, when the operation is usually performed—is a very probable consequence. Pullets of the largest breed are

selected for the purpose, as they yield the greatest weight to the poulterer; and if employed in hatching, cover the greatest number of eggs.

**DISEASES OF FOWLS.**—Fowls and poultry in general are subject to various diseases; as, *apoplexy*, *diarrhœa*, *rheumatism*, the *pip* or *thrush*, the *croup* (often termed *roup*), the *gapes*, *inflammation of the tail gland* (also called the *roup*, though the term is improperly applied), and other diseases which are not understood. Great difficulties attend the treatment of poultry diseases. Who attends to them? what complaint do they make? and when they die, how few persons acquainted with the symptoms before death make *post-mortem* examinations, and then refer those symptoms to the morbid appearances which his scalpel reveals? The following are the chief *active* disorders among them; *apoplexy*, evidenced by inflammation of the membranes of the brain, or by effusion of blood within or upon it; *peritoneal inflammation*, rapidly fatal; *inflammation of the lungs*, including the bronchial tubes; *tracheal inflammation* (or *gapes*) with parasitic worms in the windpipe; *inflammation of the mucous membrane of the intestines*, evidenced by previous dysentery; and *inflammation or intumescence of the rump gland*, symptomatic of a *febrile condition*. But what can be said as to the treatment of poultry under disease? Very little. To speak the truth, neither are their diseases well understood, nor is the treatment of them generally successful. A few observations on particular complaints may, however, be useful.

*Apoplexy* makes its attack in most instances without the slightest previous warning. Could it be known that a bird was in danger of an attack, means might perhaps be taken to insure safety. Aviary birds, in the finest health apparently, will drop dead from their perch from this cause. They are often over-fed; they have not to exercise themselves in the task of seeking for food; they have an allowance in unlimited measure, but have no according measure of muscular exertion; they “do not earn their bread before they eat it,” as wild birds do. “*Experientia docet.*” The best advice to give, as to the means of *prevention*, is to feed birds a little in proportion to the exercise which they have the power to take.

The *Pip*, or *Thrush*, may be regarded as a token of derangement of the mucous membrane of the alimentary canal generally, and not as a local disease; it is *symptomatic*. Its cure will be effected by low diet; that is (in the case of fowls), by an allowance of fresh vegetable food, mixed with potatoes and a little oatmeal, granting at the same time a plentiful supply of pure water. Give of castor oil a teaspoonful, or thereabouts, according to age and strength. Do not scrape the tongue, nor use rough modes of cleaning it, but apply a little *borax*, dissolved in tincture of myrrh and water, by means of a camel-hair pencil, two or three times a day. The symptoms of *pip* consist in a thickening of the membrane lining the tongue and palate, which causes an obstruction of the free inspiration, and makes the poor sufferer gasp for breath; the plumage becomes ruffled, the bird mopes and pines, the appetite fails, and is at last utterly extinguished, the bird at length dying, worn out by fever and starvation.

**Gapes (Inflammation of the Trachea)** is a very fatal disease, to which all

our domestic gallinaceous birds, as well as pheasants and partridges, are subject, and which often occasions great mortality. In the first instance it appears to arise from a croupy or catarrhal affection, which is indicated by running at the nostrils, watery eyes, alteration of voice, and loss of appetite and spirits. The bird dies. If the trachea be examined, it will be found replete with narrow worms, about half an inch in length, imbedded in slimy mucus. This singular worm is the *Syngamus trachealis*, or *Distoma lineare*. It consists of a long and a short body united together; the long body is the female, the short body the male; each, were it not that they are permanently united together, being an animal distinct and perfect in itself. Whether these parasitic worms are the cause or consequence of the disease, we pretend not to say, nor can we tell how they become introduced into the trachea; this, however, seems to be certain, that their removal is requisite to give the feathered patient a chance of recovery. This can be done by means of a feather, neatly trimmed, which is to be introduced into the windpipe, and turned round once or twice, and then drawn out. It will dislodge the worms, and bring back many of them adhering with slime unto it. This plan requires great dexterity, and some knowledge of the anatomy of the parts; a slow, unskillful operator may kill the already half-suffocated bird, instead of curing it. Another mode of destroying these worms is, by putting the birds in a box, and making them inhale the fumes of tobacco, thrown into it through the stalk of a tobacco-pipe. Some recommend the forcing of tobacco-smoke down the bird's throat, and others that the mouth be crammed with snuff; while many place faith in the efficacy of a pinch of salt, introduced into the back part of the mouth. Something like a scientific mode of treatment may, however, be suggested. Give a grain of *calomel*, made up with bread into a pill, or two or three grains of Plummer's pill (*pil. hydr. submur. co.*, London Pharmacopœia); after which let flour of sulphur be administered, with a little ginger, in pultaceous food composed of barley-meal. In the mean time let the bird be kept in a dry warm shed or room, apart from the rest of the fowls, as the disease may be infectious. Let the mouth and beak be washed with a weak solution of chloride of lime. A correspondent, who dates his letter from Wootton, Christchurch, speaks of turpentine as the only remedy on which to depend. His words are: "Half a teaspoonful of spirits of turpentine, mixed with a handful of grain, is a certain cure in a few days, giving a handful of such grain to a couple of dozen young chicks each day. It is the most perfect and unfailing remedy. I communicated this receipt to the 'Gardeners' Chronicle' (No. xxix., July 17, 1847, p. 476), and I understand it has been found by other persons besides myself to be successful—perfectly so. In this part of England it is the only disease of chickens; and for two seasons the number that died of it was very great." The *rationale* of this mode of treatment is as follows:—the turpentine is absorbed into the system, and so brought into contact with the parasitic worms in the windpipe, to which it is speedily fatal; they are then ejected with the mucus; and the cause of irritation being thus removed, the bird speedily recovers. Wet, ill-feeding, an ill-ventilated fowl-house, confinement on a spot or plot of ground tenanted year after year

by fowls, without attention to cleanliness, to renovation of the soil, and a proper allowance of gravel, ashes, fresh vegetables, etc.; these are the causes which produce this and many other diseases. The gapes is an epidemic disease, which often thins the preserves of pheasants and the coveys of partridges.

**Inflammation of the Lungs**, including the bronchial tubes, is not uncommon. Its symptoms are quick breathing, often with a rattle or r le very audible, dullness, disorder of plumage, vacancy in the eye, and indisposition to stir. In this, death can hardly be prevented. Human patients can explain their feelings—cattle, to a certain degree, indicate them, and speak in dumb eloquence; but birds give little indication, by voice or manner, leading to what the medical man calls *diagnosis*. The persevering use of cod-liver oil will give relief, and even effect a temporary, or at any rate an apparent cure; but who would like to breed from the bird.

**Peritoneal Inflammation, or Peritonitis.**—This disease runs so rapid a course, that death not unfrequently occurs before any marked symptoms have appeared indicative of active disease. The bird perhaps appears a little drooping—it refuses to eat; but as it is highly fed, this circumstance occasions no surprise; it retires to its roost, and is found dead in the morning. Examination at once reveals the cause of death—the peritoneal membrane exhibits all the indications of active inflammation. We have noticed the occurrence of the same disease among carnivorous mammalia. An animal appears to be as well as usual—at least it attracts no observation—but it dies suddenly. On opening the body, the cause is manifest—*Peritonitis* has done its work.

**Inflammation of the Mucous Membrane of the Intestinal Canal** is usually evinced by *dysentery*. The bird pines; it is purged; in a little time the evacuations become more or less tinged with blood, and death ensues. Damp and improper food are the causes of this affection. It can be treated with success only in the early stage. First give a small quantity of castor-oil. This will clear the bowels of irritating secretion. Afterward let the bird have doses of the *Hydrargyrum cum cret * (of the London Pharmacopœia), rhubarb, and laudanum:—of the hydrargyrum cum cret , three grains; rhubarb, two or three grains; laudanum, two, three, or four drops. Mix in a teaspoonful of gruel or gum-water. To be given every alternate day for a fortnight.

**Simple Diarrhœa** may be generally cured by a change of diet, and a little chalk given in gruel.

**Constipation of the Bowels** will yield to castor-oil, and a diet upon oatmeal porridge and green vegetables.

**Asthma.**—Both fowls and pigeons are affected with this complaint, which is evidenced by difficulty of breathing and a wheezing, rattling noise on inspiration. It is the result of a thickening of the bronchial tubes from previous inflammation, often accompanied by an alteration in the structure of the cellular tissue of a portion of the lungs. There appears to be no rational plan of treatment likely to effect a cure.

**Inflammation and Intumescence of the Rump Gland** is generally symptomatic of a febrile condition of the system. To this affection the term *roup* (an indefinite term for all the diseases of poultry) is often applied,

The treatment is simple. Let the swelling be opened by a lancet, and the matter gently squeezed out; afterward foment well with warm water; put the bird upon a diet of oatmeal and green vegetables, and, if necessary, give a teaspoonful of castor-oil. Be sure that the roosting-place is clean and well ventilated.

**Moulting.**—This process is natural, and consists in the gradual exchange of old feathers for new ones. Nevertheless it often happens that birds in a state of domestication have not sufficient vital energy for the accomplishment of the change. They require improved diet, warmth, and good water. Of course their roosting-place must be properly sheltered and ventilated. A grain or two of cayenne pepper, made into a pill with bread, may be given daily with advantage. Saffron is useless; but a nail, or any bit of iron may be put into the drinking-trough, in order to render the water chalybeate.

Fowls are subject to a loss of feathers, which must not be confounded with moulting. At first the plumage appears ruffled and disarranged; then the feathers begin to drop out, and continue to fall till the bird is greatly denuded. In the mean time it is dull and destitute of appetite, and becomes thin and feeble. This disease is most common among poultry kept in a limited space, debarred from exercise and fresh air, with a wet soil beneath them, having little or no gravel, nor any dusting-place in which to clean their plumage: it is analogous to the mange in cattle, and is not easily cured. A change of diet, good air, cleanliness, and a dusting-place (or, as some call it, a dust-bath), are essential. Some recommend small quantities of sulphur and nitre mixed with butter to be daily given.

As the successful treatment of diseases may sometimes depend on promptitude, it may be useful for every poultry-keeper to have a convenient supply of a few simple medicines. The following may be named as rather suggestive than complete:—1. jalap, in fifteen-grain powders; 2. hydr. cum cretâ, in three and five-grain doses; 3. cod-liver oil; 4. cocoa-nut oil; 5. flour of brimstone; 6. Baily's roup pills.

In cases where inflammation is suspected, the hydr. cum cretâ is pronounced by the best judges to be a valuable medicine. To a grown fowl five grains, with from five to fifteen grains of jalap (according to the strength of the dose required), may be given. Jalap is a very good poultry medicine. Cocoa-nut oil and flour of brimstone make perhaps the best ointment for white comb, and one which is less disfiguring to the plumage than turmeric. Baily's roup pills are almost universally known and appreciated.

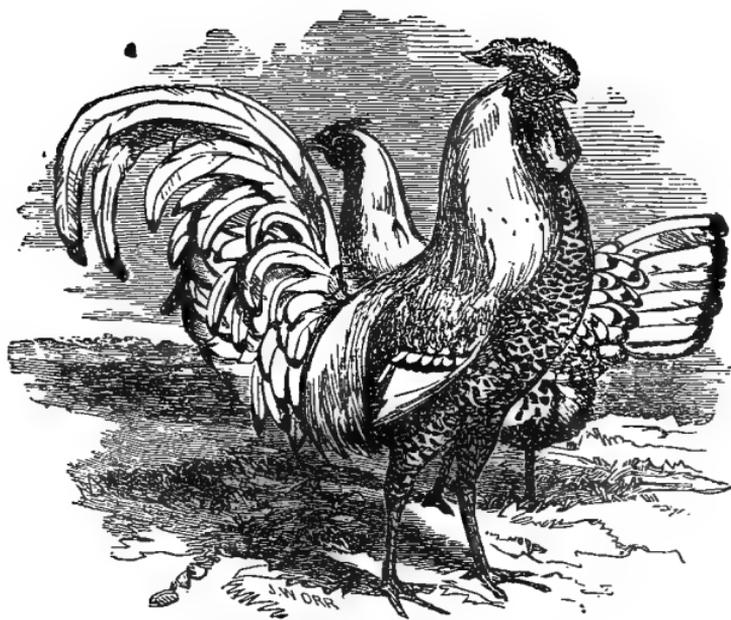
**SHIPPING POULTRY AND EGGS.**—Messrs. Charles R. Huntington & Co., produce commission merchants in New York, give the following directions as to slaughtering and shipping poultry and eggs:—

Food in the crop injures the appearance, is liable to sour, and purchasers object to this worse than useless weight: therefore keep from food twenty-four hours before killing. Opening the veins in the neck is the best mode of killing. If the head be taken off at first, the skin will recede from the neck-bone, presenting a repulsive appearance. Most of the poultry sent to this market is "scalded" "or wet-picked," but "dry-picked" is preferred by a few, and sells, to a limited extent only,

at good prices. Poultry may be picked dry without difficulty, if done immediately after killing. For scalding poultry, the water should be as near the boiling point as possible, without actually boiling; the bird, held by the legs, should be immersed and lifted up and down in the water, three times—the motion helps the hot water to penetrate the plumage, and take proper effect upon the skin. Continue to hold the bird by the legs with one hand, while plucking the feathers with the other without a moment's delay after taking out—if skillfully handled in this way, the feathers and pin-feathers may all be removed without breaking the skin. A torn or broken skin greatly injures the appearance, and the price will be low in proportion. The intestines or the crop should not be “drawn.” After removing the feathers, the head may be taken off and the skin drawn over the neck-bone and tied; it should next be “plumped” by being dipped into water, nearly or quite boiling hot, and then at once into cold water about the same length of time. Some think the hot plunge sufficient without the cold. It should be entirely cold but not frozen before being packed. If it reaches market without freezing it will sell all the better. In packing, when practicable, use clean hand-threshed rye-straw; if this cannot be had, wheat or oat straw will answer, but be sure that it is clean and free from dust of any kind. Place a layer of straw at the bottom, then alternate layers of poultry and straw, taking care to stow snugly, back upward, legs under the body, filling vacancies with straw, and filling the packages so that the cover will draw down very snugly upon the contents, so as to prevent shifting or shucking on the way. Boxes are the best packages, and should contain from one hundred and fifty to three hundred. Large boxes are inconvenient, and more apt to get injured. Number the packages, mark the contents, the gross weight, and the tare of each on the cover; mark plainly to our address, placing your own initials also on the package, and send invoice and railroad receipt by mail, to avoid errors or delay in reporting sales.

Eggs require special care in packing. First—secure strong and substantial barrels, either good second-hand barrels, or new split-stave oak ones. Commence by putting a small quantity of clean wheat or oat straw at the bottom of the barrel; cover this with dry, sound oats, as clean, bright, and as free from dust as you can get them, say about two inches of uniform depth. Then pack eggs on the side, leaving a space of three-quarters of an inch between the outside tier and the staves; fill up the layers by making regular tiers. Carefully avoid packing so close together as to crowd them. Use plenty of oats, and shake the barrel well after covering each layer with oats. Leave a space of about three inches at the top, and cover the top layer of eggs with about two inches' depth of oats. Cut, of brown paper, a circle sheet that will just fit the barrel, and lay it on the oats. Then put on this a sufficient quantity of wheat or oat straw, or dry hay, to require a strong pressure to get the head into the crozen. Examine eggs closely, and be particular in counting. Always mark the quantity of eggs in dozens, and the number of bushels of oats contained in each barrel upon the head, and also upon the side of each barrel, with the initials of your name or firm. Eggs packed in this manner will command ready sale in this city, at the

current market price, without any deduction for broken or rotten eggs, at all times. In order to avoid claims for rotten eggs it is desirable to ship frequently.

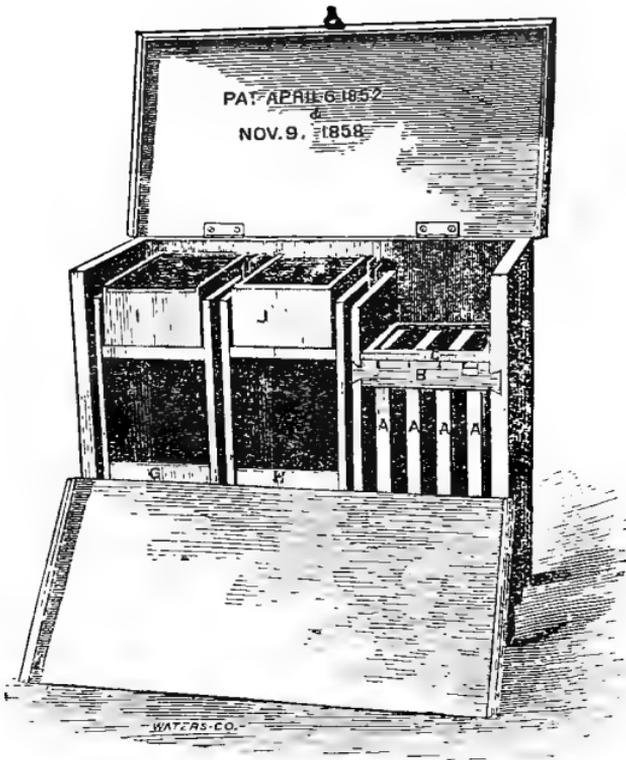


THE SILVER-SPANGLED HAMBURG FOWL.

B E E S:

THEIR

HABITS AND MANAGEMENT.



PAT. APRIL 6, 1852  
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**BEEES.****THEIR HABITS AND MANAGEMENT.**

**THREE CLASSES OF BEES.**—The Queen Bee is the sovereign, and literally the prolific parent of all her subjects. She is the sole monarch.



Her body is longer, larger, and more pointed than that of the others, and her wings are much shorter than theirs, hardly reaching beyond her middle, whereas those of the others cover the entire body; her belly and legs are of a deep golden color, and the latter are not furnished with the little brushes which those of the workers have, to help them in collecting the floury matter which they require for making honey.

**Anecdote of two Queen Bees.**—The queen bears no rival authority. If there should be a second queen, she is either sent forth with an attendant swarm of colonists, or put to death by the other bees.

Huber gives an account of a duel between two queens, who, issuing from their nurseries in the same hive, rushed into deadly conflict, catching each other with the teeth. As if they dreaded the fatal consequences to themselves, which would follow from unsheathing their darts, they had the prudence to separate at the height of their fury and fly away. But the other bees compelled them to decide the point of sovereignty on the spot, and then forced them to the contest again. This was done repeatedly, after intervals of breathing-time, until the stronger of the two, seizing the other by the wing, stabbed her to death.

The queen-bee commences depositing her eggs when about five days old; during the heat of the season she lays from one hundred and fifty to two hundred eggs per day, and lays with little or no intermission from early spring to the middle of autumn.

**Drones.**—The second class of bees are the drones. They are bulkier in the body than either the queen or the working-bee.



Their head is rounder, proboscis shorter, eyes fuller, an additional articulation to the antennæ, and *no sting*. They also make more noise in flying than the other bees. The drones are the *males* of the hive; by them the royal mother is impregnated and her eggs fertilized. How or when this intercourse takes place has long furnished philosophers with a subject for controversy and inquiry; and it has not even yet been set at rest in such a manner as to admit being proved to a positive demonstration.

The drones form about a tenth part of the population of a hive. They are certainly idle and lazy, as are the husbands of other queens; yet they fulfill the objects of their creation. They cannot collect honey, for they have not the necessary organs for the purpose; their teeth are too little and too short for breaking off the capsules, their mouths are not well formed for sucking the sweets of flowers; and their legs have not those brushes or powder-puffs which enable the other to bring home

the farina wanted for making wax. During the summer they find food for themselves, and pass their time in lounging from flower to flower, and they are not found in the hive during the winter. By an extraordinary instinct, they are massacred without pity by the females before this period, in order to save the winter stock of honey, until they have departed voluntarily to some nook where they may rest until wanted in the next spring. These poor things have no weapons of defense.

**Working Bee.**—The third class is the working bee. The working bee is considerably less than either the queen bee or the drone. It is



about half an inch in length, of a blackish brown color, covered with closely set hairs all over the body, which aid it in carrying the farina it gathers from the flowers; and on the *tibia*, or *forearm*, as it were, of the hind leg, is a cavity of cup-like form, for the reception of the kneaded little ball of pollen. It is the working bee which collects honey and pollen, and which forms the cells, cleans out the

hive, protects the queen, looks after the condition of the young brood, destroys or expels the drones, when these are no longer necessary to the well-being of the community; who, in short, performs all the offices connected with the hive and its contents, save only those which have reference to the reproduction of the species. The working bees are of no sex, and are furnished with a horny and hollow sting, through which poison is ejected into the wound it makes; this poison is of an acrid character, and of great power in its effects, proving fatal to any insect, and instances are on record of its proving so to horses and cattle, nay, even to human beings: when human beings, however, are stung (an accident that will happen very seldom, if they use the precautions in manipulating with their bees, that shall be detailed in the course of this volume), they can instantaneously obtain relief by pressing upon the point stung with the tube of a key; this will extract the sting and relieve the pain, and the application of common spirits of hartshorn will instantaneously remove it; the poison being of an acid nature, and being thus at once neutralized by the application of this penetrating and volatile alkali.

**WONDERFUL INSTINCTS AND CONTRIVANCES OF BEES.**—The contrivances of bees in the construction of their combs are amongst the most wonderful works of God, as regards insect creation. “The form of the comb is in every country the same, the proportions accurately alike, the size the same, to the fraction of a line—go where you will, and the form is proved to be that which the most refined analysis has enabled mathematicians to discover, as of all others the best adapted for the purpose of saving room, work, and materials. This discovery was only made about a century ago; nay, the instrument that enabled us to find it out was unknown for half a century before that application of its powers. And yet the bee has been for thousands of years, in all countries, unerringly working according to a fixed rule, which no one had discovered until the eighteenth century.”

We may instance among other surprising illustrations of the ingenuity of these wonderful creatures, that they lay the foundations of their cities at the top of the hive, and build downward. They have straight

passages, or lanes, across their different dwelling-places, wide enough for two bees to pass.

**ADVANTAGES OF KEEPING BEES.**—It is strange, that though the expense of establishing stocks of bees, where there is a garden, is so trivial, and the possible gain so great, few people take the trouble of keeping them. Country cottagers too generally neglect to take advantage even of an adjoining common or lonely garden, which specially invite to bee-keeping. Where cottage gardens are very small and crowded, and multitudes of children swarm, it is certainly difficult, if not dangerous, to introduce tens of thousands of bees, with their formidable stings; but in numberless instances where bee-husbandry is neglected, it might be pursued with some profit.

No farmer, nor even humble cottager, who has a patch of garden, and lives near commons, heath-covered hills, or woods, should be without hives, as the great supply of bees' food is obtained by their own exertions. It is not the rarest and most beautiful flowers which afford the best honey, but those which abound in the open fields as well as in the garden; the flowers of mountain heath, clover, trefoil, beans, vetches, wild thyme, turnips and cabbages, privet, elder, bramble, rue, and, above all, the blossoms of the common furze, are among the best materials for honey. The cost of food is scarcely any thing, and the return may be considered clear gain.

The trouble of rearing bees, compared with the pleasure or the profit, is nothing.

**MANAGEMENT OF BEES.**—To him who is about engaging in bee-keeping, the first question of interest is, how to select his stock. As a rule, the spring is the best season to purchase a stock of bees, as they have then passed the casualties of the winter; and the question of profit, so far as the first year is concerned, is quite clear, if the swarms are judiciously chosen. Their value depends upon the health and number of bees, and the time they have occupied the hive. The number in a colony can be judged of with comparative accuracy by raising the hives and examining them, or by the hum produced on giving them slight taps; and by the weight, as shown either by lifting or weighing. The age of a swarm is told by the color of the comb; in new swarms the color being white, and varying from that to nearly black, in very old swarms. The brood combs grow thicker with age, and the cells and the bees hatched in them are therefore smaller, and the latter feebler. It is poor economy to purchase a colony more than two years old.

**Transporting Bees.**—Let the hive be placed on a cloth, the ends of which must be carefully tied over the top; if it is to be taken to a distance, the hive so tied up may be swung on a pole fastened across a cart from side to side; this prevents the jolting to which it might otherwise be subject, which would disturb the bees, and probably shake down the comb. When arrived at its destination, let the hive be placed on the stand, and if any of the bees have fallen out on the cloth, place them near the entrance, and they will soon find their way in.

**SPRING MANAGEMENT.**—As soon as the weather is fine examine your hives by lifting them carefully from the stand. Clear away all the dead bees and refuse matters which have collected during the winter. Rub

the mouldiness and damp from the floor-board, and let it be well dried. The bottoms of the combs often become mouldy in the winter, especially in light stocks, and it will be a good thing to cut off the lower portions, which may be done with a table-knife, and without danger, by turning the hive on one side, in the evening or early in the morning, or at any time, if you take the precaution of wearing a bee-dress, hereafter described. The bees will soon renew the combs, and their health will be improved by the removal of the decayed portions.

**Feeding.**—Many swarms die in spring for want of food, and the wise apiarian will therefore feed his bees liberally, bearing in mind that what he gives them is not lost, as they can fully store for their owners' use what is not needed for their own support.

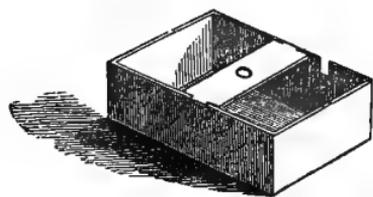
Begin to feed the light stocks; a liberal supply of food will be amply repaid by the consequent health and vigor of your bees, and the abundant store they will collect for your future benefit. And do not prematurely encourage the bees to go in search of food, but rather confine them to their homes. Guard against the admission of stranger bees while yours are feeding. Give honey now, if you can, rather than syrup, as it forms a better ingredient than sugar in the jelly which supports the young brood.

The consumption of food in a hive is now perhaps greater than at any period of the year. The queen lays from one hundred to two hundred eggs daily, and the increase of the brood is so prodigious, that it is impossible for any except a well-stored hive to meet the demand for food. Many persons wonder that their bees die in the spring, when they have survived the winter; but the food consumed during the cold weather is comparatively very small to what it is during breeding time. On this ground, then, feed abundantly all the stocks, but especially the light ones.

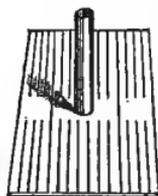
Feeding outside the hive, by placing food at the entrance, is a bad method, as stranger bees are attracted, which deprive your bees of a proportion of that which you have provided for them. Feeding at the bottom disturbs the bees, lowers the temperature of the hive when the food is introduced, and thus occasions loss of life; therefore, to obviate these evils, ingenious feeding-pans have been invented for supplying food at the top of the hive.

The following directions for feeding bees are from "The Bee-Keepers' Chart:—" "Before feeding

is commenced the hives should be set down upon the floors and the entrances for the bees so closed as to admit only one or two at a time. Two or three inch auger holes may be bored in the top, and the feeder placed by the side of them and covered



PHELPS'S BEE-FEEDER.



with a small box, and this covered with an old carpet to prevent other bees from scenting the feed." Phelps's *Bee-Feeder* is thus figured

and described, and it may lead the ingenious to adopt it on a better plan :

“ It consists of a tin pan, or tray, placed in a wooden box, with a float to fit, and a tin tube passes through the float and is secured to it on the under side. The float may be raised at any time, even if it is covered with bees, by means of the tube, and the syrup poured into the pan through the tube by inserting a funnel in the top of it. The float supports the bees and prevents them from getting into the syrup, and as they consume the syrup it settles down with them. A piece of wood across the top of the box, with a hole for the tube, keeps it in its place, and a pane of glass on each side of this confines the bees, and affords an opportunity to observe their operations while feeding.”

The same author recommends the following compositions for feeding bees :

First: two pounds West India or Orleans sugar; three gills ale; one gill Malaga wine; (if the ale and wine cannot be had, use sap or water,) one teaspoonful fine salt. Mix together in a tin or copper vessel; set it over a slow fire; stir occasionally until it arrives to a boiling point; set it off, and let it cool, remove the scum, and it is fit for use.

Second: one gallon (or twelve pounds) of West India or any other honey; four pounds West India or Orleans sugar; one gallon maple sap or water; half a pint ale; two tablespoonsful fine salt. Heat and mix as above. This composition may be made without the ale by using water.

It is however doubted by some experienced bee-keepers, whether the general feeding of bees is, upon the whole profitable. It is argued that while it is wise to feed bees that have not sufficient food to keep them alive, any thing given them beyond that is unprofitable, and produces an inferior article of honey, if any thing but pure honey be fed. The following is Mr. Eddy's argument :

“ The theory of feeding bees on a large scale has had its day. It has presented splendid results for a time, and resulted at length in splendid failures. Cheap honey, or a composition, has been used, and the bees have been fed freely, under the impression that whatever they stored in their cells must of course be honey of the first quality. I would ask why Cuba or Southern honey is not made of the first quality when it is stored up for the first time in Cuba or Florida, if bees have the power of converting an inferior article into one of superior quality. The true reason is, that much of this so-called honey is taken from the sugar plantations, or from flowers which do not furnish the best honey. And the second transportation, although done by “ Yankee ” bees, does not produce any chemical change in the article which is fed. Honey is gathered, not made by the bees. Those who purchase in market Cuba honey which is packed up in “ Yankee ” boxes, do not get the best end of the bargain. They have yet to learn that the packing or transportation does not make it the fine-flavored and wholesome article which is found in white clover upon all our hills in New England. The feeding of the bees on a large scale, or with a view to secure larger quantities of surplus honey, operates unfavorably upon the bees in a variety of ways, and the principal objections to it are the following ; 1. There

is no profit in it. No man gets the quantity of honey which he feeds. 2. It prevents the bees from going abroad to gather honey from the fields. 3. If the bees are fed liberally late in the fall and early in the spring, there will be very few empty cells in which to rear young bees. 4. It is deceptive, because a cheap and inferior article is sold for one of superior quality. 5. It results, in the process of time, in the extinction of the bees. The feeding of the bees may be practiced with advantage whenever they are not amply supplied with winter stores, a thing which happens to late swarms and to those from which large quantities of honey have been taken. For this purpose a cheap article may be used to help them through the winter. It may be desirable to take from the bees all the white clover honey which can be obtained in boxes with a view to supply the bees with a cheaper article."

**Daily Examination** of the hives for the removal of all filth tends to domesticate the bees, and if done gently the effect is to so accustom them to their keeper that he can handle them with perfect impunity.

**The Position of the Bee-House** should be free from exposure to the north and west winds, and from the morning sun. A southwest exposure is recommended by the best authorities.

**SUMMER MANAGEMENT.—Preparations for Swarms.**—Every thing necessary should now be prepared for the establishment of swarms, which may be expected during the next two months, else there may be running hither and thither, while the swarm takes wing and is lost through your delayed preparation. Hives, or boxes if you intend to make use of these, must be kept dry and sweet; stands or stools to place them on must be prepared, and a hand-brush, leather gloves, crape, or other covering for the face, placed in readiness.

As bees require water to drink, especially through this and the next month, it is necessary to place some for them, if there is no pond or rivulet near. Cötton says that, in the Isle of Wight, the people have a notion that every bee goes down to the sea to drink once a day. Water is needful for them in the breeding season, and they will drink water with salt in it, and like it better than the freshest brook that runs. It is very curious to see how they will flock by thousands to the drinking-troughs in April, May, and part of June; and then their thirst seems to be quenched all of a sudden, for not one will be seen at them. The reason seems to be that they do not want so much water after the greater part of the young brood is hatched.

Shallow dishes or plates filled with water, and having thin boards, pierced with small holes, floating on it, from which the bees may drink without fear of drowning, are convenient. Small pebbles or moss, placed in the plates with the water, will answer almost as well.

The hives, if old, should be scalded to destroy the larvæ of insects. If new, the only preparation is to wet the inside with salt and water, sweetened with either honey, molasses, or sugar.

**Indications of Swarming.**—The most certain indications of swarming are, the hive appearing full of bees—clusters of them gathering on the outside, and sometimes hanging from the alighting-board; they also neglect their daily toil and refrain from going abroad in search of sweets, even though the weather be ever so inviting. Just before they take

flight, the hive is hushed, the bees are silent and carefully loading themselves with provender for their journey. For two or three nights prior to swarming, you will also hear a peculiar humming noise within the hive; the second swarm is announced by a different sort of buzzing, being, according to some writers, the result of a contest as to which of the two queens shall lead off from the hive. It is the old queen who leads off the first swarm.

If a swarm be about to quit the hive, the slightest change of weather will prevent their doing so, but nothing so effectually as a shower of rain; hence an excellent mode of preventing it, when the bees cluster on the outside of the hive, by syringing them with water from a common metallic syringe. When a swarm leaves the hive, if it do not settle on some tree or bush, but remains in the air, and you fear its going off to too great a distance, if not evading you altogether, you may bring it down by throwing up sand or dust, which the bees mistake for rain, or by firing a gun, which they mistake for thunder; hence the old fashion of the country people following a swarm with the noise of fire-shovels and frying-pans. You must be the more diligent in at once securing your swarm, for it is a fact that the bees send out scouts previous to swarming, whose duty it is to select a proper habitation for the colony. It is, on this account, a good plan, when you anticipate a swarm, to leave an empty hive, previously smeared on the interior with honey, in some convenient place, but not too near the old one.

When the swarm settles, the bees collect themselves in a heap round the queen, hanging to each other by means of their feet. When thus suspended from a tree, they may be secured by simply holding an empty hive under them, and tapping the branch from which they are suspended. They should, in this case, be sprinkled with honey and water, and confined for about twelve hours. When a swarm divides into two or more bands, and settle separately, it is probable that there are two queens. In this case you must secure one of them.

If, through your inattention, a second swarm comes off, you should, as soon as you have hived it, secure its queen, and return the swarm to the hive; indeed, when deprived of its queen, it will usually immediately return of its own accord. Swarming is a subject, we have reason to believe, which is very generally misunderstood, most persons desiring to promote it, conceiving that the greater the number of swarms the richer will the hives be in August. The very reverse of this is the case; for, when a hive is weak in numbers, a sufficient number of bees cannot be spared to go forth for honey; and hence they will be scarcely able to collect enough for their actual support, far less to collect any surplus for their master's benefit. Hear Mr. Briggs:

“The swarming of bees is a subject on which much misconception prevails. Most persons who keep their bees in the old straw-hive plan, and suffocating system, appear to anticipate their swarming with much anxiety, and to be of opinion that the greater number of swarms—firsts, seconds, thirds, etc.—they obtain from their old hives during the summer, the more remunerative will they prove to the owner at the end of the season; whereas the reverse of the above practice is much nearer of being the best system to follow, which I shall endeavor to elucidate. It

has been proved from observation, that the average percentage of swarms have been twenty-four in May, sixty in June, fourteen in July, and two in August; from which it will appear that June is the principal month for swarming, in ordinary seasons; and it is in June and July that the greatest quantities of honey are stored up by the bees, when managed in a judicious manner.

“When the swarming is assisted and encouraged during June and July, the old stocks are considerably weakened, and the swarms are employed in building combs in their new hives, collecting pollen, and attending to the young brood, until the best part of the honey-storing season is over; so that, at the honey harvest in autumn, it will frequently require the contents of five or six old stocks, or late swarms, to produce as much pure honey as might have been obtained from one colony on the system of management which is recommended.”

In collateral boxes, and in capped hives, swarming may be prevented by affording the bees additional accommodation, and reducing the temperature; and, for this end, it is recommended, by most apiarians, that the hive or box should be furnished with a thermometer as well as ventilator. We think, however, that even those who do not possess these accommodations may manage well enough by proper observation and attention to the symptoms we have detailed. When these appear in a collateral box-hive, open one of the partitions, and admit the bees into a new apartment; if all be full, take off a box, empty and restore it. In the case of a capped hive, remove the bung, and admit the bees to the cap; if full, remove, empty, and restore it. On this subject Mr. Briggs says:

“The most favorable degrees of heat for the prosperity of the brood are from  $75^{\circ}$  to  $90^{\circ}$  in the stock hive, and from  $65^{\circ}$  to  $75^{\circ}$  in the side boxes. The heat in a prosperous hive is sometimes upward of  $70^{\circ}$  at Christmas, and will, in hot summer weather, sometimes rise to near  $120^{\circ}$ , at which time the combs are in great danger of being damaged, and of falling to the floor of the hive; this may, however, be prevented, by giving extra room when required, and by shading the hives from extreme heat, as previously directed. It should always be borne in mind that all operations with bees should be performed as carefully and as speedily as circumstances will permit. The late Mr. T. Nutt remarked, in a conversation with him a few months previous to his decease, ‘that in removing boxes, glasses, slides, etc., the apiarian should proceed in a manner so steady and cautious, that the bees should scarcely know that their habitation had been meddled with;’ in which remarks I fully concur.”

After having a new swarm, you must also recollect, that if unfavorable weather follow their departure, you must feed them, otherwise they will be starved; indeed, it would be well if each new swarm were always fed for a few days, as this will assist them in gaining strength in numbers and in store, before the principal part of the honey season goes over. In conclusion we would merely say, that the weight of a good swarm should be from five to seven pounds, and that all under five pounds in weight should be united to others, as being too weak in numbers to support themselves.

**Bee Dress.**—In hiving a swarm it is as well to be protected with a proper bee dress. *Prevention is better than cure*, and it is *better to be sure than sorry*; yet bees are certainly less apt to sting at this time than any other.

Some persons are particularly unhappy in possessing those qualities which render them disagreeable to bees. The main objections are, excessive timidity, and likewise, with some, an unpleasant odor, in some instances the result of personal negligence, but frequently of peculiarity of constitution. The remedies are a *bee-dress* for the former, and the use of some strong perfume which the bees like, and which will effectually conceal whatever is offensive to them.

“I have gone among them,” says Mr. Worlidge, “in their greatest anger and madness, only with a handful of sweet herbs in my hand, fanning about my face, as it were to obscure and defend it. Also, if a bee do by accident buzz about you, being unprovided, thrust your face amongst a parcel of boughs or herbs, and he will desert you. But the most secure way of all, and beyond the completest harness yet published, is to have a net knit with so small meshes that a bee cannot pass through, and of fine thread or silk, large enough to go over your hat, and to lie down to the collar of your dress, through which you may perfectly see what you do without danger, having also on a pair of woolen gloves.”

Mr. E. W. Phelps describes the following form of a bee-dress, which may be procured at an expense not exceeding twenty-five cents: “Take one and a half yards of thin, light, three-quarter muslin, and a piece of wire-cloth (such as is used for meal sieves) about six inches square; it may be obtained of wire-weavers in most of our large towns and cities, or of hardware dealers. Lay the muslin over the head, with the ends down over the shoulders, with one end of the selvedge in front and the other back. The back part may be cut and fitted to the head, and a cord run in to gather it around the neck, and the wire-cloth sewed in over the face, first rounding the corners in shape of the face. It should extend down below the mouth, to afford free respiration, and the muslin sewed together below the wire-cloth, sufficient to extend below the vest. It may be worn under a coat, but it is not the best way, as it is usually warm weather when it is worn, and with the head-dress and a coat over it, a person will be very uncomfortable on account of the heat; besides, the bees will crawl up under one’s coat and vest, and when in close quarters will often prick through the shirt, and tickle a person under the ribs. To prevent this and the other difficulty, I have prepared myself with a garment made of the same kind of material as the head-dress, and in the form of a hunting-shirt, open before, with buttons close together, to button up tight. I first put on my head-dress, and then over this my hunting-shirt, buttoned under my pants; and with a pair of thick woolen gloves, with stocking legs sewed to the wrists, to draw up over my sleeves, and my pants tied over my boots, I can defy all the forces they choose to bring against me.

**Clustering Shrubs and Bushes**, placed in the vicinity of the apiary, are recommended by experienced bee-keepers, as tending to diminish the difficulties of hiving bees. Mr. Phelps directs to “take the *seed-ends* of

mullen-stalks about a dozen in number, and tie these to the tops of poles; the poles should be set in the ground so as to be easily taken up after the bees have settled on them; by managing in this manner, the hive may be set in the apiary, before hiving, and the bees may be carried on the pole and laid by the side of the hive, when they will enter it; this saves the trouble of moving the hive after hiving, and consequently no bees will be lost. The mullen tops should be attached to the poles so as to lie nearly horizontally. What there is in the mullen-stalks so attracting to the bees I know not, unless it is their rough, uneven surface, which affords the bees security against falling; old dry weather-beaten stalks are as good as any."

Mr. Weeks directs that "when there are no fruit-trees nor shrubbery in the immediate vicinity of the bees, it is found that they will cluster on bushes artificially set down about the hives; say, take hemlock, cedar, or sugar-maple bushes, six, eight, or ten feet high; sharpen the largest end, with the foliage remaining on the top, and set them down like bean-poles promiscuously round about the hives, two, three, or four rods distant; when the bees swarm, they will usually cluster in a body on some one of them, which may be pulled up, and the bees shaken off for the hive. Some apiarians confine a bunch of the seed-ends of dry mullen-stalks near the top of the bush, so as to represent, at a little distance, a cluster of bees: this is said to be unfailing in catching swarms. Others recommend to drive down two stakes, two or three feet apart, and confine a stick of sufficient strength to each stake two or three feet from the ground, forming a cross-bar, so that, when a board twelve feet long is laid, one end resting on the cross-bar and the other on the ground, the bees will cluster under it, admitting it is at a reasonable distance, and yet so far from the old stock as to be out of hearing of their hum. Any one will know how to turn the board over, and set an empty hive over the bees.

"The hiver is made of three rough boards, half an inch thick, seven inches wide, twenty-four inches long, nailed together like a common trough, open at both ends,—a strap of iron riveted on its outside, across the center of each board, with a shank or socket to insert a rod to handle it with, so that when inverted by means of the rod, and placed over the bees when alighting, it forms a kind of half hive, which they readily enter. There should be from a dozen to twenty half-inch holes bored through the top board, so as to let the alighting bees enter through the holes. When a small proportion of the bees are found in the hiver, it may be moved a few feet from the limb, which may be shaken with another rod with a hook on its end, which disengages the bees, and in a few moments the whole swarm will be found in the hiver. By the addition of ferules and joints, the hiver may be raised to any reasonable height. Thus the labor of climbing, the use of ladders, and cutting the limbs of precious fruit-trees, is entirely dispensed with. It likewise enables the apiarian, in large establishments, to divide out and keep separate his swarms, which might otherwise alight many in one body."

**Management of Black Combs.**—The combs in hives that have stood for several years become black and useless, because the bees never clear out the cells in which the brood has been reared, and the skins which the

young bees cast gradually fill up the cells until they are too small for breeding in; in consequence the hives get weaker and weaker; swarming cannot take place, and at last the bees die.

To prevent this fatal end, you may in spring, before breeding-time commences, after fumigating the bees a little, turn up the hive and cut out half the comb; put the bees in again, and during the summer they will fill up the vacancy, and have room for breeding. Next spring take out the remainder of the old comb in the same way. One stock treated in this manner is said to have been kept for the long period of sixty years. Sometimes, when a stock has not swarmed, it is desirable to remove the bees altogether from the old hive into a new one. This must only be done during the first week in July; if attempted earlier, the new brood not being all hatched, many bee-grubs would be destroyed, and you would have a weak stock. On the other hand, if transferred later, there would not be time for them to make their comb and lay up winter store. Fumigate or intoxicate the bees at night, and put them while stupefied into a new hive, taking care that the queen is among them; place the hive on the stand in the same position the old one occupied, and on the morrow they will commence their labor as a new swarm. If the weather be fine, they will do well; but if they are found to be weak in autumn, take them up and unite them with another stock.

September is the proper time for carefully inspecting your stocks, to ascertain which will stand the winter, for feeding those which have not sufficient food, and for uniting weak stocks to strong ones, as previously recommended.

By gently striking the hives, you may judge whether they contain many or few bees, from the greater or lesser noise they make in the buzzing which immediately follows. Do not leave any to remain for the winter but such as weigh about twenty pounds.\* But recollect that a hive with two thousand bees will be more likely to survive than one with only one thousand, even if the latter have much more honey. On this account it is important to ascertain the number of bees, and to make your standing stocks as strong as possible, to maintain sufficient heat in the hives.

**FALL FEEDING.**—Whatever food is required must be given now, as bees should not on any account be fed in winter. Those who have not the convenience of the feeding-pans for the top of the hive, should provide little hollow troughs made of elder, or a split bamboo stopped at the ends. These must be filled with honey or syrup, and then pushed into the mouth of the hive at sunset, the entrance being carefully closed, to prevent other bees from entering. Feeding should not take place in the daytime, as the hive will then be subject to the depredations of wasps and robber-bees which are attracted by the scent, and not unfrequently devour the whole of the honey. In the morning, a little before sunrise, remove the troughs. Continue this operation nightly until you are sure

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\* *Age* will cause hives to weigh heavier than their *legitimate* contents would call for; this is occasioned by an accumulation of *bee-bread* and the cast sloughs which had formerly served as envelopes to the young. In the case of old hives, you must, therefore, allow from two to five pounds, according to age, for these matters.

your bees have sufficient winter provision. Do not be stingy : as we have said before, you will reap the profit of liberality to your bees in the rich return they will make.

**HOUSING, etc., IN WINTER.**—When there is snow upon the ground, the entrances of your hives should be entirely closed, and a screen or shade should be placed before the hive, in case of an accidental sunny day occurring, in order to prevent the bees from encountering even a single deceptive ray.

Another danger from which you are imperatively called upon to protect your bees during winter is *dampness*. It is to this cause that the loss of many a stock is to be attributed—an *internal dampness*, generated within the hive itself. This is best remedied by careful ventilation, placing a bell-glass, well covered with flannel, over the aperture on the top of your hive or box, removing it from time to time, and carefully wiping away from its interior the damp formed by condensed vapor ; this remedy is at once simple and efficacious.

It will, perhaps, appear to some of our readers a singular experiment, resorted to by some bee-keepers, viz., *burying the hives*. When this is to be attempted, the hive should be buried in a cool, dry, shady place, among leaves, about a foot deep, and the interment should be performed during the first or second week of November.

A friend buried a hive of bees in the first week of November, about a foot deep, amongst dry leaves, etc., and disinterred it in the last week of February, when it was just *two pounds lighter than it was in November*, and the bees in a *lively and healthy state*. Another person immured a hive of bees in the earth four feet deep, in the second week of November, and at the end of January it was removed, and weighed *only three ounces less than it did before it was buried*.

The above experiments are worthy of attention ; a shed having a northern aspect, and which is as dry as possible, would be a suitable place for further trials. The principal points by which there might be cause for fear of failure, would, as in other cases, be from dampness, disease for want of fresh air, and attacks from vermin, etc. To prevent the former I would recommend that the hives be placed on a long frame of wood, covered by a web of closely worked wire, and raised a few inches from the ground, the ends of which should communicate with and be occasionally opened to the fresh air. A long tube should also be placed from the hole at the top of each hive to the open air of the shed, from the upper end of which any dampness might be condensed by bell-glasses, and conveyed away as already directed.

Among other obvious mistakes, I may mention the recommendation to give the bees an opportunity of leaving the hive, and going abroad every fine day, already detailed. What advantage is expected to be derived from thus permitting the insects to go forth ? They may be supposed to want exercise. This is a mistake ; for the bees naturally crowd together, and remain in a sort of torpor during winter, and every thing that could tend to interfere with, or arouse them from it, must, of course, prove contrary to their natural instincts, and consequently, prejudicial. During winter the bees are inactive.

**HIVES AND BOXES.**—By having proper hives and boxes for bees, the

following advantages are obtained :—First—the power of depriving bees of honey at pleasure, without injuring them. Secondly—obtaining it in larger quantities, and of finer quality. Thirdly—The means of a more thorough ventilation, the keeping of the bees cool, and of enlarging their accommodations at pleasure, and the power to control swarming at will.

**ENEMIES OF BEES.**—These are far more numerous than their diseases, and are as follows :

Poultry, mice, toads, frogs, snails, slugs, caterpillars, moths, millipedes, wood-lice, ants, lice, spiders, wasps, hornets.

Fowls should not be permitted in any apiary. They will kill and eat the bees, and such as they do not destroy they will annoy and disturb—besides, your bees will probably occupy a stand in your garden, a quarter whence other reasons should necessarily exclude poultry.

**Mice.**—While the bees are vigorous, the field-mouse does not dare attack the hive ; but as the cold approaches, and the bees become less active, he enters, and commencing with the lower comb, ascends by degrees as the bees become torpid, until he either clears all away, or by the smell of the honey he has wasted on the board, induces other bees to come and plunder. As soon as the warm weather returns, the surviving bees will leave the hive in disgust. The remedy is easy. By having your straw hives, if you use such, coated on the exterior with Roman cement, you will prevent mice from nestling in the straw, whence otherwise they would speedily eat their way into the interior, and by narrowing the entrance of the hive in the manner already described, you will effectually keep out these little intruders. If your stands be placed on a single foot, or if the feet are so placed under the foot-board as to leave a wide, projecting ledge, no mice can arrive at the hive.

Toads will kill bees occasionally, but not in sufficient numbers to excite our alarm ; but the toad is rather to be regarded as a friend to the bees—one of their enemies, the spider, being his favorite food.

Frogs may be classed with toads.

**Snails and Slugs.**—These creatures are not absolutely enemies of bees, as they have no design upon them or their honey in entering the hive, but merely do so from accident. The mischief done by them consists in the alarm and confusion they occasion. The bees first attack the unfortunate intruder and kill him with their stings, after which they carefully incase him in propolis, effectually preventing putrefaction or the production of maggots.

**Caterpillars.**—The most dreaded is the caterpillar of the wax-moth, so called from the ravages it makes amongst the combs as soon as it obtains entrance. By having the legs of the stand placed as we have already described, no caterpillar can climb up to the hive ; but this will not prevent the moth herself from entering and depositing eggs in the hive ; and so prolific are these moths, that a single brood would suffice to destroy a whole stock. Periodical fumigation, and cutting away such combs as contain the grubs, are the remedies to be adopted. Moths are only *nocturnal* enemies. During the day you have nothing to fear from their attacks. Let the entrance to the hive, therefore, be nearly closed in the evening, and you will protect your bees from their ravages. Columella recommends, as a trap for moths, a bottle, or other vessel,

with a long and narrow neck increasing gradually to a wide mouth, and having a light in the neck, to be placed under the hive in the evening. We can vouch for the efficacy of this trap—it will destroy numbers. Another particular to be attended to is to have your stocks sufficiently strong; and for this purpose, if the hive attacked be weak, unite it to the bees of another hive, in the manner already described. The bees are themselves, if sufficiently strong in numbers, both willing and able to destroy the intruders. If weak, they will necessarily fall victims.

**Millipedes, or Wood-lice,** are often produced by the stands being made of decayed wood, or the hive being placed too near an old hedge. Let the stand be of new wood, and strew soot on the ground under and about the hive. This will also serve in part as a protection against the attacks of ants.

**Ants.**—You should always destroy such ants' nests as you find in the neighborhood of a hive. In the West Indies, glass-feet are used to prevent these insects from getting into furniture, etc. Might not such be used with advantage for bee-hives?

**Lice.**—These are small parasitical insects of a red color, which adhere to the body of the bee, and derive their nourishment from their juices. They are about the size of a grain of mustard-seed, or rather smaller.

Reaumur and others tried many remedies for these troublesome insects, but in vain, till at length Madame Vicat discovered that Morocco tobacco will kill the lice without injuring the bees.

**Spiders.**—Brush away their webs wherever you meet with them near your stand.

**Wasps and Hornets.**—These insects are most noxious to bees. Dig up and destroy their nests wherever you meet with them; but you will most effectually get rid of them by offering a reward for every queen wasp brought to you in spring. The destruction of each queen is tantamount to that of an entire nest; and if this plan were generally adopted, wasps would eventually be extirpated.

**Birds.**—Among those which are the greatest enemies to bees, we may mention sparrows and swallows. Set traps near the hives, baited with dead bees; shoot the birds; and hang up a few of such birds as you kill, on trees near the stands. Perseverance for a time in this will rid you of the annoyance.

**Bees.**—Bees are amongst the most dangerous foes of their own kind, being bold and resolute plunderers. It is only weak stocks, however, that suffer, so that union is the obvious cure. Avoid also placing your hives too close together; and also avoid at any time placing a weak stock near a strong one.

**BEE-FLOWERS.**—Conspicuous among all the plants loved by bees (for the best of reasons, that they get the most honey or other substances from them), are clover, wild-thyme, heath and broom, borage, French buckwheat, and *Melilotus leucantha*. This last may be usefully grown for the bees' especial gratification. It is easily cultivated, blooms from June to November, and is ornamental in addition to its other good qualities. But the most important qualification of bee-pasturage is, that there shall be always something for the bees, from the very earliest

spring to the very latest autumn. It will be useful, therefore, to append a list of bee-flowers.

**Spring.**—*Erica carnea*,\* winter aconite,\* rosemary,\* *laurustinus*, hazel,\* snow-drop, crocus,\* willow,\* osier,\* primrose, hepatica, violet, almond, wallflower\* (single), borage,\* onion. gooseberry, apricot, peach, apple, gooseberry,\* currant,\* laurel, turnip,\* cabbage, etc.,\* strawberry, tulip, hawthorn, gorse or furze, columbine, laburnum, berberry,\* *ribes sanguineum*, Dutch clover.\*

**Summer.**—*Syringa*, *helianthemum*, annual poppy,\* sea-kale, French willow, sweet-brier, bean, yellow lupine, *mignonette*,\* blackberry, chestnut, mallow, lime,\* hyssop, teazle, nasturtium, yellow vetch, sainfoin, broom, wheat, viper's bugloss,\* raspberry,\* *symphora*, *racemosa*.

**Autumn.**—*Michaelmas* daisy, winter savory, purple houseleek, ivy, honeysuckle, French buckwheat\* sowed at midsummer, Spanish broom,\* hollyhock,\* heath,\* sunflower, lemon thyme,\* *St. John's-wort*, *melilotus leucantha*.\*

Those marked with an asterisk are understood to be the flowers especially favored by the bees. What a choice little garden for himself, as well as for his bees, the apiarian may make from the above list, if he does not choose to leave the bees dependent upon the stores of the neighborhood at large!

**TRANSPORTING BEES.**—Though few, in this country, it is presumed, will adopt the plan recommended in the following paragraphs, yet they are interesting as showing the pains taken elsewhere in the keeping of bees:

“Should the surrounding neighborhood not furnish a sufficiency of flowers, the practice of transportation, or shifting, is strongly recommended by many authors. It is not in the power of every bee-keeper, but as those whose home is placed by a river or canal, have a means at hand for transporting their hives, we have chosen to mention it here. In some countries, boats are built expressly for this purpose. They receive a very large number of hives in each boat, and by traveling for a few hours at night, the bees find themselves in a new country during their working hours, and the hives are rapidly filled with honey and wax of the best quality. The boatmen receive a small sum for each hive that they transport, but we rather fancy that their ingenuity does not rest until it has extracted some portion of the honey from the best-filled hives. The Nile is much used for this purpose, and bees traverse the entire length of Egypt during the summer. In China ducks are subjected to the same migratory life, and thrive amazingly. Hives may easily be carried on men's shoulders, as that mode of conveyance shakes them less than carriage by wagon. Heaths are the best places that bees can possibly live in, and in Scotland there are people who make their living by taking care of hives during the time that the heath is in blossom, a period of about two months, for which time a rent of from one shilling to eighteen pence is paid by the proprietor. It is always necessary while the bees are migrating, to take them at least ten miles during the nocturnal journey, as they are otherwise apt to fly back to the former position of their hive, and to lose themselves in searching for it. The distance to which bees can fly for food is shown in the following anecdote, which has been recently published:

“A man who kept bees in Holborn, wishing to find out where they worked, sprinkled them all with a red powder as they came out of the hive in the morning. As the heath and thyme were now in full bloom, he at once thought that Hampstead, being the nearest heath, would be the likeliest place to find his bees. As soon, therefore, as his bees were gone away, he hastened to the heights of Hampstead. The walk was a long and toilsome one, of at least four miles, in a July sun. But he trudged manfully on, soon left behind him Camden and Kentish towns, and at last was refreshed with the soft summer breeze sweeping across the purple and golden bloom of the heath. After a few minutes' rest on the green sward, he began his search, and before long was delighted to find there, among thousands of other busy bees, his own little fellows in the dusty red coats, which he had given them in the morning.' Many of the bees made the journey more than twice in each day, thus piloting themselves through sixteen miles of smoke and dust within the twelve hours.

“If the hives are taken by water, they should always be placed on the shore at some distance from the bank, before opening the doors, as they will very probably when returning home, wearied and laden with their burdens, fall into the water before they can reach the hive. If the hives are placed for the season, they should be kept at some little distance from other hives, as if they are weak, their more powerful neighbors will inevitably plunder them.”

**FUMIGATION.**—The following particular description of the manner of fumigating or stupefying bees will enable any one to practice it.

Fumigation implies directing certain smoke of a stupefying character into the hives, so as to render the bees harmless while their combs are being removed, while at the same time no injury is done to the bees themselves. There are several substances which stupefy; tobacco is one, but it is apt to give the wax and honey an unpleasant flavor, and we will, therefore, say nothing about it. The best material that can be used for this purpose, is the lycoperdon, or common puff-ball. A fine specimen of this fungus will grow as large as a child's head. It may be found in almost any field where mushrooms grow. It should always be gathered when nearly ripe, in dry weather, and either exposed to the heat of the sun or placed in an oven until it turns brown and leathery. Some always squeeze it flat during the drying process, as it then can be packed easier, and appears to take fire sooner than if left to dry in any shape it chooses to take. In order to insure its burning freely when lighted, some recommend that when dried, it should be dipped in a very weak solution of saltpetre, and again dried. There are many ways of applying the smoke, but all are useless unless the fungus is retained outside the hive, and only the smoke permitted to enter, as the bees are sure to fall on the burning mass, and thus many will be killed or maimed. Moreover, the operator ought to be able to regulate the amount of smoke poured into the hive. Mr. Cotton, the author of “My Bee-Book,” managed it by having a tin box made to fit the nose of a pair of bellows, in which was placed a piece of lighted fungus about twice the size of a hen's egg. There were two openings in the box, one to admit the nose of the bellows, and the other immediately opposite, from which the

smoke poured. The box being fixed on the nose of the bellows, and the end being placed against the entrance of the hive, a few vigorous puffs soon fill the hive with the stupefying smoke, under whose effects, after a brief buzz of indignant astonishment, the bees are heard falling as thick as hail, and in a few minutes all is still within.

In performing the work of fumigation, many failures have occurred, from setting about the operation too hastily, or from the non-observance of a few rules that can be easily remembered, and as easily put in practice. In the first place, great care must be taken that the smoke of the fungus or other material used for the purpose is not admitted into the hive at too high a temperature. If this is the case, the heat of the smoke will in the first place scorch and kill the bees, who will rush to the entrance of the hive on the first intrusion of the fumigating tube, and will also melt the wax of the combs, and do considerable mischief. The tube, therefore, should be a very long one, and small in diameter. There is no hurry about the operation, work the bellows quite deliberately, and the danger of burning the poor bees, or spoiling the combs, will be avoided. There is hardly a more pitiable sight than to find on turning up the hive a number of bees lying on the board, with scorched and shriveled wings—a loss of no small importance, as you will want every bee to set to work immediately, to repair the devastations committed in the hive. Another mistake not unfrequently occurs in following Mr. Cotton's directions too literally. It is not sufficient to have the fumigating box made merely of tin, as will most certainly be done if that order is sent to a tinman, for the heat of the ignited puff-ball will speedily melt the solder, and the whole apparatus will fall to pieces. A case of this kind occurred very recently. The box and tube were made according to order, the clay prepared for stopping the entrance of the hive round the tube, the fungus was duly lighted, placed in the box, the bellows fitted, and then vigorously worked. Suddenly, while the operators were complacently puffing away at the bellows, and congratulating themselves on securing both honey and bees by this method, the box fell in pieces, the tube consequently was drawn out of the hive door, and out rushed the bees in a tumultuous state of indignation, thereby putting their would-be captors to an ignominious flight. So, lest you meet with a similar misfortune, give particular orders to have the whole affair made fire-proof, and then you may proceed without the least danger. Of course this must all be done some hours after dark, or the bees who are already out will soon signify their dislike of finding intruders when they return to the hive. It is also necessary to be very quick in cutting out the combs, as the bees do not remain long in their state of torpor or intoxication, and are quite ready on their revival to employ their stings. Always examine the combs that are removed, to see if any bees are left in them, as not unfrequently, when they begin to find that they cannot overpower the vapor, they dive to the bottom of an empty cell, and sometimes are so protected by this precaution, that they revive rather sooner than their less fortunate companions. The wax of the combs thus obtained is much whiter than if sulphur is used, and of course, will fetch a higher price in the market, besides being free from a slight tinge of sulphury flavor, which hangs about them for a long time.

For fumigating, the circular bellows, set in motion by a winch, are much superior to the double bellows, as a constant stream of smoke is introduced into the hive, instead of a series of puffs. Mr. Pettigrew recommends (probably because they can more certainly be obtained when wanted), cotton rags, tightly rolled up in the form of a candle, and applied in the same way as the fungus. If so, it will be found advisable to steep the rags in a solution of nitre, as otherwise they are very apt to go out before a sufficiency of smoke has issued from them. The solution, however, must be weak also, or it may do mischief instead of good, for ignited nitre is apt to send forth sparks, especially if it is urged on by a draught of air. It may be possible that ether or chloroform may answer better than either fungus or rags, but the experiments do not yet appear to have been sufficiently numerous to enable one to speak with confidence. At all events, although chloroform and ether may not supersede fungus and nitre in stupefying bees, the smoke of puff-ball threatens to supersede chloroform and ether in their anæsthetic power as applied to human beings. We are bound to observe that fumigation may not be altogether so harmless as is supposed, and therefore should not be used without necessity.

When, after applying the fumigating apparatus, as has been described above, the stillness that reigns in the hive indicates that the bees are in a state of insensibility, the hive may then be turned up for any necessary operations. If honey is wanted choose the side combs, so as not to interfere with the brood in the center, and be moderate. Replace the violated hive carefully, and the bees will soon recover from their state of partial intoxication, and set to work to repair the ravages that have been made in their stores. Nor does fumigation injure the working power of the bees. Unlike the effects of alcoholic compounds, which when taken in an overdose, entirely prostrate the sufferer for some time, the smoke of the fungus causes a very transient intoxication, which in a few minutes passes away, and the bees appear rather refreshed than otherwise, after their involuntary debauch.

**DRIVING.**—In the hands of a skillful operator, driving will often be found useful, as it partly supersedes the necessity of fumigation. By driving, the bee-master induces his winged auxiliaries to change their position, by working on their fears instead of stupefying what brains they have. The best method of driving bees will be found in the pages of Bevan, who appears to think very highly of the operation. "Toward the dusk of the evening, when the family will be all, or nearly all at home, and no annoyance be experienced from stranger-bees, let the hive, or box, be raised gently from its floor-board, and supported on three thin wedges; let an assistant be at hand, provided with a tobacco-pipe, or the fumigating box and bellows, from one of which at the moment of raising the hive, let a few whiffs of tobacco smoke be blown into it all round, and a few more after it has been raised. This expedient will soon induce the bees to ascend and congregate at the upper part of the hive. It is next to be inverted steadily on a small tub or peck measure, puffed again, and then quickly and accurately surmounted by an empty hive or box, as nearly of its own diameter as possible. After securely closing the two hives, by tying a cloth firmly round them above and

below the junction, so that not a bee may escape, it will be proper to place an empty decoy hive upon the stand where the full hive stood, to amuse any straggling bees that may have stayed out late, or that may escape during the operation. The conjoined hives are then to be removed into a darkened room, in the manner already described, when, if the hive be *well peopled*, and the *weather warm*, by drumming at first gently, and then smartly with the open hands or a couple of sticks on the outside of the hive, the bees will be so alarmed, that in a few minutes they will have ascended into the super. The ascent may always be ascertained by the humming noise attending it. The impulse thus communicated to the bees should be given in the direction of the combs, and by no means upon those parts of the hive which are opposite to their sides, as it might separate them from their attachments."

"The exchange of habitation having been effected, the ulterior proceedings must be regulated by the object in view. If it be wished to have possession of the full hive, it will be simply necessary to leave the decoy-hive in its place, and after covering the honey-combs with a cloth to prevent them from being scented, to carry the bees with their temporary abode toward their usual place of entrance, when, by spreading a cloth on the ground, or on a table, all the bees may be dislodged and made to fall upon it, by a smart stroke with the hands upon the top of the hive, and if one side of the cloth be raised to the resting-board, the bees will gradually ascend, and reoccupy their original station."

Driving is made use of by the Persian villagers, whose hives are made in a cylindrical form, and built horizontally into the walls of their houses, the bees' entrance being outside the wall, and a movable door inside, the end of the hive projecting more than a foot into the room. When the villager wishes for some honey, he drums smartly upon the end of the hive which projects into his room, which causes the bees to withdraw to the other end. The circular lid is then quickly opened, as many combs as he wishes for cut out, and the lid closed again.

No one should be without spare hives or boxes ready to be used when required, even if they do not at the outset fit up a complete apparatus. Thus—

1. A spare box or hive will be ready to receive a swarm obtained in the ordinary manner, with all its picturesque but inconvenient accessories: as, long watching to know the moment of swarming; long runnings, perhaps, to overtake the vagrant young colony, over hill and valley, brake and brier, and amid interminable ear-splitting tumult, which the bees have the bad taste, it is supposed, to like; and the race often ending in seeing the whole cluster safely deposited in a neighbor's apiary, who swears it went from his hive. If you wish to avoid all that kind of thing, do your best to give the bees no motive for such wanderings, and every conceivable reason to stay where they are. Put a decoy-hive ready, with a delicious piece of comb in it (an old hive, with its own combs, will be still more attractive), and it is most likely the scouts sent out to explore will return with such a glowing account of the land of milk and honey they have discovered, that the swarm will be impatient to be off and take possession. This must, however, be done with great care, and the decoy-hive not placed in the air too soon, as

its seductive stores will not only attract the bees who are intended to be its legitimate occupants, but also wasps, hornets, and robber-bees of all descriptions, so that the swarm will have to inaugurate their entrance by a battle.

2. Bees always will settle themselves as soon as possible after swarming, and if they have not already determined upon a new habitation, will fix themselves in the first place that they think will suit them. There are many instances known of bees having swarmed unexpectedly, and after escaping from their former owners, having made their habitation in a hollow tree in a wood, or in the roof of some deserted hovel. There have been several instances of bees choosing to make their nests in the roof or tower of a church, and an instance came very recently under the writer's notice. For several years the congregation had been considerably annoyed by the presence of bees during the service, but had made no particular endeavors to rid themselves of the plague. One summer, however, brought with it such an increase of bees that it was deemed necessary to institute an inquiry; for the winged intruders came in such numbers, and buzzed about so loudly, and frightened the juvenile portion of the congregation to such a degree, that the service could not proceed with any comfort. After some search, a hole was discovered in the roof of the church, through which the bees were constantly passing. This was accordingly stopped up, and the workmen retired, congratulating themselves on getting rid of their winged enemies so easily. They were, however, quite mistaken, for the bees descended in undiminished numbers. The roof was again examined, and found to be in such bad repair, that the colony of bees who had taken up their residence between the roof and the leads had found numerous openings, which they had enlarged for their own purposes. How to eject this formidable band was now the subject of deep consultation. Sulphur-smoke would not answer, because it would soon pass out through the apertures in the roof, and besides, there was a very prevalent alarm lest the church should be set on fire. At last a veteran apiarian was sent for from the next village. He immediately planted a ladder against the exterior wall, and examined the stones until he discovered the entrance to the bees' habitation. It was a mere fissure between two stones, where some of the mortar had fallen out, and the remainder been extracted by the bees for their own convenience. After surveying the prospect for some time, he declared that a stone must be taken out of the wall before the bees could be dislodged, and immediately began to loosen the stone which had already been partly deprived of its mortar. The bees, of course, were highly indignant at such an assault, but the man coolly proceeded with his work, not heeding their anger in the least. When the stone had been completely loosened, he laid by the crowbar, and deliberately pulled it out with his hands. Out rushed a perfect cloud of bees full in his face; but he quietly laid the stone down, and contented himself with brushing them off his face until he had made further investigations. All the spectators took to flight at the first appearance of the enraged bees; but their imperturbable enemy remained quietly at his post, and after descending the ladder pulled some eight or ten bees out of his hair, and remarked that they had not stung him so much as he expected.

It turned out that the man was almost invulnerable to stings; and although several dozen stings or so were in his face, they did not leave the slightest mark, and certainly did not appear to inconvenience him in the very smallest degree. He afterward in the same cool manner extracted the greater part of the combs, and the bees, taking the hint, speedily evacuated the premises. There was but little honey, but abundance of black, worn-out combs, and plenty of young bees in every stage of advancement. It is said that if any one is repeatedly stung by scorpions, the pain diminishes each time, and that at last the system is entirely uninjured by it. An English naturalist was bold enough to try the experiment upon himself, and found that after he had been stung four or five times the pain was comparatively trifling. Perhaps the same may be the case with regard to the bee-stings, and the old man just mentioned possibly owed his immunity to his frequent experience, as Mithridates was said to have completely fortified himself against poisons, by gradually imbuing his system with them.

3. Adopting as a rule the non-disturbance in any serious way of your stock-hive, so that honey and brood shall there at least flourish together, when you think it is full (a solid sound from the hive, and a great long-continued buzz from the bees in answer to a tap, is good evidence of that state), attach your side-box, open the communication, and make the bees enter and leave by the entrance to the side-box, which you will do by closing up the entrance to the other at night when the bees are all at home. A little piece of comb, fastened at the top of the side-box, may be at once a useful hint and a temptation to the bees. This box is to be kept solely for honey-combs by ventilation, which prevents the queen from laying eggs in it. When the heat in the side-box is  $70^{\circ}$ , you should admit air through the top by means of a piece of tin pierced with holes. A draft through the hive, from the entrance to the roof, now takes place. This must not be done until you see the bees have fairly passed the Rubicon, and have done and ventured too much to be inclined to retreat to the stock-hive. When the box is full, you can take it away, and replace it emptied, or by another, or by opening a communication to a similar side-box on the opposite side, as in Mr. Grant's hive. The bees in it will soon flock to the queen in the parent hive. This arrangement prevents swarming, or at least has a great tendency to prevent it; as the bees have more room given to them just when they want it. It also raises the stock itself to the highest state of prosperity, as only the surplus honey is taken away, and the brood is not interfered with.

4. But if you wish to have an increase of stock without the inconvenience of natural swarming, you may easily do so by treating the side-box exactly the same as the chief one—that is, by leaving it unventilated. Brood as well as honey will then be deposited in it, and you have only to watch for a favorable opportunity of securing two stocks. This should be a little before the natural period of swarming, of which the signs are, clustering on the outside, activity and commotion among the drones, inactivity of the workers, portentous silence in the hive in the day (during which the prudent bees are supposed to be filling their pockets with provisions for their journey), and a singular hum-

ming noise at night, presumed to come from the young queen-bees announcing their advent. But these warnings apply less to the first than to the subsequent swarms. However, there is a pretty good rule for effective action. As soon as you find the side-box is nearly full, watch for an opportunity when the queen, with about two-thirds of the bees of the colony, is in the side-box, then cut off the communication with, and remove, the parent hive three or four feet distant, and put an empty hive in its exact position. The returning bees will flock into the side-box as before, and that hive is done with. As to the parent-hive, the nurse-bees will take every care of the brood in it; in fact, they will be just as though a swarm with the queen had left them; and will proceed with due equanimity to supply her place in the approved way. This is the mode practiced with success by Mr. Grant, and may be varied according to circumstances. For instance, if the queen should not have been left in the side-box with the greater portion of the bees, and has, therefore, been removed with the parent hive, the rest must be in effect the same, as regards the two hives; most of the bees then might leave the side-box and flock to the queen in the parent-hive; but if there be a brood in the side-box, it appears that the nurse-bees will not desert it, and, therefore, there are still two communities, and both well provided with all they require for a new start in life.

5. There is also practiced, it is said with great profit, a more summary way of proceeding to make an artificial swarm, which consists in fumigating the bees, in order to divide them into two bodies as before. The period chosen is from the beginning of May to the middle of July, and when there are as many bees on the board at the bottom as will fill a thirty-two (eight and a half inches by six) sized flower-pot. To ascertain this, blow a little smoke into them and turn up the hive. Before commencing operations, place the hive intended for the new colony on the stand, with a bit of comb in its roof, and a stick across the middle to aid in the support of the combs. If you are short of hives, this one may be used instead of an additional empty hive in performing the operations about to be described. But the bit of comb may be somewhat in the way. The bees having been stupefied by the fumigation, the hive is turned up, its top rested on the ground, and an empty hive placed over it of exactly the same shape (at the edges at least), and a cloth tied round the circle of junction. Then tap or drum gently at the sides of the two hives for about ten minutes, in which time probably about two-thirds of the bees will have ascended into the upper hive. The queen, fortunately for the operation, is generally one of the first either to run away from or to confront the danger (we know not which it is) by ascending. If your hive have a glass window, as all should have, you can see when about the right proportion have ascended; if not, you must guess with the aid above given of the knowledge of the ordinary duration of time occupied. Now take off the top hive and reverse it also on the ground, while you make sure the queen is there, throwing, meanwhile, the cloth (that you have removed) over the exposed bottom of the parent hive. If the queen be there (and she is easily distinguishable) you have only to shake queen and bees into the prepared hive on the board, and restore the parent colony also to the ordinary resting-place, where the bees will soon rear

a new queen for it. If the queen be not there, then repeat the process with the prepared hive, and so you will catch her at last. You can then return the first batch of bees that were removed either to the parent hive or to the prepared hive, by simply shaking them into the one which most needs them.

Old hives thus deprived of their queens, and made to rear new ones, involve another important advantage. In twenty-one days the entire brood will be reared, no fresh brood having been deposited (through the absence of an old queen), and the young queen not having begun to lay, which they do in about ten days after they leave the cell. Here, then, where the hives are heavy, say forty or more pounds in weight, is an opportunity of removing the bees (by fumigation) into a new hive, and selling the contents of the old one. The honey is thus earlier than usual in the market, and fetches a higher price. Weak swarms should invariably be joined either to strong ones, or to each other, and as soon as possible after swarming. It is only a strong community that can so successfully establish themselves before winter, as to be in no danger from its severity. This junction may be performed by fumigation, and taking away one of the queens. A stock without a queen may by the same means be added to one that is more fortunate: and this applies even to the restoration of a swarm to its own parent hive if there be ample room in it.

We have said nothing of the plan of annually destroying the bees, for it is almost an insult to our readers to suppose they would approve of so senseless and unprofitable as well as cruel a practice. It is quite true that thus all the honey that is made in a season may be obtained at once, just in the same way that all the golden eggs of the goose in the fable were to be obtained at once. And if this wholesale deprivation be desired, it is perfectly obtainable without destroying the bees, by simply fumigating them, and removing them to another hive. And if you don't choose to feed the bees during the winter, let somebody else have them that will. It is possible, in a favorable late season, they may not need any assistance. At all events, let it be the golden maxim of bee management never to allow a single bee to be injured if you can help it.

We close our article upon bees with the quaint story of an old English apiarian.—“In or about the year 1717, one of my swarms settling among the close-twisted branches of some codling-trees, and not to be got into an hive without more help, my maid-servant, hired into the family the Michaelmas before, being in the garden, very officiously offered her assistance, so far as to hold the hive while I dislodged the bees, she being little apprehensive of what followed.

“Having never been acquainted with bees, and likewise afraid, she put a linen cloth over her head and shoulders, concluding that would be a sufficient guard, and secure her from their swords. A few of the bees fell into the hive; some upon the ground; but the main body of them upon the cloth which covered her upper garments.

“No sooner had I taken the hive out of her hands, but in a terrible fright and surprise, she cried out the bees were got under the covering, crowding up towards her breast and face, which immediately put her

into a trembling posture. When I perceived the veil was of no further service, she at last gave me leave to remove it. This done, a most affecting spectacle presented itself to the view of all the company, filling me with the deepest distress and concern, as I thought myself the unhappy instrument of drawing her into so great and imminent hazard of her life, which now so manifestly lay at stake.

"It is not in my power to tell the confusion and distress of mind I was in, from the awful apprehensions it raised; and her dread and terror in such circumstances may reasonably be supposed to be much more. Every moment she was at the point of retiring with all the bees about her. Vain thought! to escape by flight. She might have left the place indeed, but could not the company, and the remedy would have been much worse than the disease. Had she enraged them, all resistance had been vain, and nothing less than her life would have atoned for the offense. And now to have had that life (in so much jeopardy) insured, what would I not have given.

"To prevent, therefore, a flight which must have been attended with so fatal a consequence, I spared not to urge all the arguments I could think of, and used the most affectionate entreaties, begging her, with all the earnestness in my power, to stand her ground, and keep her present posture; in order to which, I gave encouragement to hope, in a little space, for a full discharge from her disagreeable companions; on the other hand, assuring her she had no other chance for her life. I was, through necessity, constantly reasoning with her, or else beseeching and encouraging her.

"I began to search among them for the queen, now got in a great body upon her breast, about her neck, and up to her chin. I presently saw her, and immediately seized her, taking her from the crowd, with some of the commons in company with her, and put them together into the hive. Here I watched her for some time, and as I did not observe that she came out, I conceived an expectation of seeing the whole body quickly abandon their settlement; but instead of that, I soon observed them, to my greater sorrow and surprise, gathering closer together without the least signal for departing. Upon this I immediately reflected, that either there must be another sovereign, or that the same was returned. I directly commenced a second search, and in a short time, with a most agreeable surprise, found a second or the same; she strove, by entering further into the crowd, to escape me, which I was fully determined against; and apprehending her without any further ceremony, or the least apology, I reconducted her, with a great number of the populace, into the hive. And now the melancholy scene began to change, and give way to one infinitely more agreeable and pleasant.

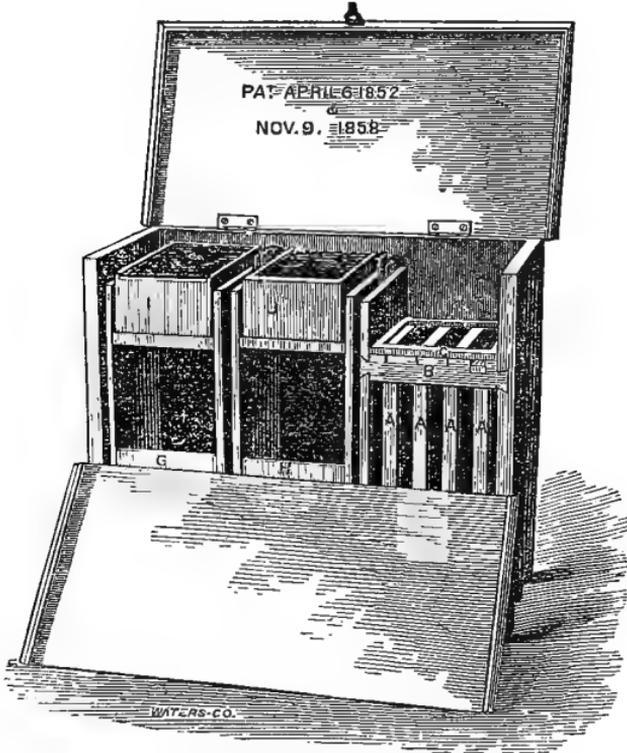
"The bees, presently missing their queen, began to dislodge and repair to the hive, crowding into it in multitudes, and in the greatest hurry imaginable. And in the space of two or three minutes the maid had not a single bee about her, neither had she so much as one sting, a small number of which, would have quickly stopped her breath.

"How inexpressible the pleasure which succeeded her past fears! What joy appeared in every countenance upon so signal a deliverance! and what mutual congratulations were heard! I never call to mind the

wonderful escape without a secret and very sensible pleasure. I hope never to see such another sight, though I triumph in this most noble stand and glorious victory."

**HIVES AND BOXES.**—Various improved hives and boxes have, from time to time, been invented and more or less used, giving greater or less satisfaction; yet among them all, we regard *E. W. Phelps's Combination Hive\** as one of the best. It was first patented in 1852, and during the past year has been greatly improved. It is true that his hives are *patented*, and many are disposed to look with disfavor upon *all patents*. However, we are too much indebted to the protection afforded by our patent laws, for the many and important inventions in all the arts of life, to render any refutation necessary of the futile objection.

FIG. 1.



PHELPS'S COMBINATION HIVE.

These hives are made in four different forms and styles, to suit the views and wants of persons in different locations and circumstances,—the prices varying from \$2.50 to \$15.00. The latter is a “non-swarming hive,” made with a mahogany or rosewood case in imitation of a beautiful wash-stand, and intended to be set in a gentleman’s office or dwelling. The others include swarming and dividing hives, in different

\* These hives are manufactured at Elizabeth, New Jersey, where information concerning them can be obtained.

styles and finish—some with boxes, others composed of “*improved, movable, sectional frames,*” and others combining the two principles—using a square box for the brood hive and “*sectional frames,*” and small honey boxes for obtaining the surplus honey.

We believe the following illustrations and descriptions of these hives will be acceptable to our readers.

Fig. 1 is a hive containing the two principles combined; with the top and back opened, showing the internal arrangement. The boxes G and H, with the honey boxes I and J on the top, represent the “*Combination Hive,*” patented 1852. That part occupied with the “*Sectional Frames,*” A A A A is the late improvement of Mr. Phelps, also combining the two improvements, by using one box (H) for the *brood-hive*, with three or four of the frames, A A A, placed by the side (as seen in the engraving), with communications from the brood-hive to the frames, which are easily opened and closed at will, by means of a thin slide between the apartments. The advantages secured by the use of the small frames, in the place of a large honey box, as formerly used, is, in obtaining the surplus honey in a much more desirable condition, either for family use, or for market: as it is stored in the small frames in separate pieces, five or six inches square, in which condition it is taken from the hive without cutting or marring the combs, and can be kept in the frames until used.

The arrangement for freeing the honey and frames from the bees is a matter worthy of note, as all that is necessary to be done is, to close the communication between the apartments with the slides, and insert a long tin exit tube in the front of the hive, so that the bees must pass out *through the tube*, from the apartments containing the honey-frames, and in returning to the hive, will enter the *brood* apartment through a more open space. In this way the bees are soon cleared from the honey, leaving it free for removal, without resorting to smoking, driving, etc.

The main brood-hive (H) is occupied by the bees as their *permanent* residence, and is about one foot square in the clear, in the hives as now made. It is divided into two equal parts, and joined at the center by means of small dowels of wire, so as to be separated at will. In each apartment there is either a *sectional frame*, or *guide bars*, attached at the adjoining edges, in which the bees construct their combs, parallel with the separating joint, so that either half can be removed at will, without cutting or marring the combs, while at the same time there is no partition in the hive to separate the combs or bees; consequently, they construct their brood-combs equally in each half of the hive, and when either is removed, there is a certainty of obtaining about one half of the brood-combs—an advantage not secured in any other arrangement that has come under our notice.

The tops of these hives are so constructed that by means of a late improvement the bees *cannot* construct their combs *across* the frames or bars. This is a very important feature in these hives, for, unless the combs are constructed straight on the frames or bars, and *parallel* with the joint of separation, the hive could not be taken apart without marring the combs and injuring the bees. It is also very important, in connection with the “*movable frames,*” as here much difficulty has been experienced;

and in numerous instances the "movable frames," as constructed in other hives, have been rendered *entirely useless*, as far as removing the combs is concerned, on account of the bees building their combs *across* them, fastening them all together. It will be observed, that while the bees are altogether in this "*dividing-hive*," the same as in any square box-hive, and occupy the central part with their brood-combs, as is their custom, *either part* can be removed at will to obtain a portion of the honey or the old brood combs; or, the colony may be *divided*, at the proper season, and stocks multiplied without the trouble and risk attending swarming, whenever there is a sufficient quantity of bees to justify it.

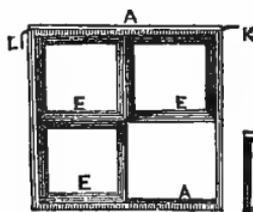


FIG. 2.



FIG. 3.

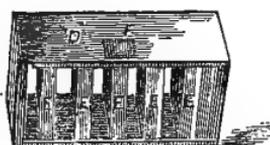


FIG. 4.

Fig. 2 is a side view of one of the frames (A) taken out. Inside of this are four smaller frames (EEEE), each one of which is about six inches square. The frame A is now dispensed with, and a more simple and cheap manner is employed of connecting the "*sectional frames*" by means of small wire hooks, thereby saving the space occupied by the large frame, and the expense of making it.

Fig. 3 is one of the sectional frames taken out.

Fig. 4 shows several of the smaller frames EEE, arranged in a box to be placed on the top of the hive when desired. In operating with the bees, the frames can be removed, replaced, or shifted, as circumstances may require.

We think every practical bee-keeper will see at once the advantage secured by the use of these small frames, over the large movable frame as constructed by others, for the honey taken from the hive, in the large frames, is in combs some twelve inches square, very inconvenient to handle or take to market, while in the small frames, the honey is in the most beautiful and convenient form possible, to use in the family, or retail in market; being in separate pieces about five inches square, weighing from one to one and a half pounds per frame, in which condition it may be kept until required for use; and one comb used at a time, without moving others. He also manufactures a plain low-priced *non-moving hive*, the case constructed the same as shown in the engraving, only longer and higher, to afford ample space for all the bees to labor and store honey in one apartment. The interior of this hive is composed entirely of "*sectional frames*," placed side by side and one above the other, three or four tiers high, to the number of one hundred or more of the small frames, with no partitions or divisions between them, where the bees all labor in a mass, storing the honey in the frames; when at the close of the honey season it may be removed in the frames

without moving the combs, or injury or exposure to the bees. This hive is so constructed, that, if desired, the bees may be confined to a space of one foot square, and the hive converted into a swarming hive.

The hives are all well ventilated at top and bottom, and the bottom being attached with butts and buttons, is easily let down and cleaned, without disturbing the bees. There is also a most ingenious and effectual device for destroying the bee-moth, attached to the bottom of the hive, affording the moth or worms a most convenient harbor, or hiding-place in which they are sure to secrete themselves, when the trap can be withdrawn and the worms destroyed without opening the hive or disturbing the bees.

A "*non-swarming hive*," combining the foregoing advantages has long been sought for, as there are many persons who have never kept bees, that would gladly do so, if swarming and the trouble attending it could be avoided. And as the backs of these hives are glass, they afford a good opportunity to observe the operations of the bees without exposure to them. It is an interesting sight to observe a good populous colony of "busy bees" at their labors in the hive, during the season for gathering honey, and the pleasure is increased by the reflection that we are to share with them in the products of their labors.

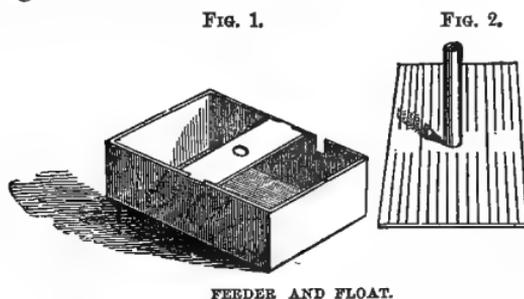
Another important advantage which these hives possess over those in common use, is, that the tops are composed of frames, or bars, on which the combs are attached, admitting a free circulation of air between all the combs, so that all the moisture and vapor, caused by the breath and warmth of the bees escapes freely up between them, keeping them dry and healthy, and free from mildew or mould; and it is strongly recommended to take off the honey boxes during winter, to give free ventilation, and prevent frost accumulating in the hive.

These hives are also well adapted to set in a building, on account of the peculiar construction of the entrance for the bees, and the alighting board, which forms a tube or spout to conduct the bees through the side of the building, or out at a window of a dwelling, without admitting them into it, to interfere with any one. Many persons are using these hives in their dwellings and offices. In most instances they are made in imitation of an inclosed washstand, and can be opened and all the operations of the bees observed without danger from them, and the honey obtained in tumblers or glass jars, or, in the small frames, or boxes.

We also give a brief description of Mr. Phelps's "bee-feeder." This is a very simple and practical arrangement for feeding bees; and as used in these hives obviates all danger of other bees robbing the colonies, or swarms, while being fed—a point of much importance, as generally, there is great danger of other bees being attracted to the hives by the scent of the feed, and, as it is the weakest and smallest families that usually require feeding, they are not able to defend themselves against the attacks of their more populous neighbors; and consequently, the robbers will enter the hives, and in a very short time, carry off all the honey it contains; and hence more injury than good has, in most cases, resulted from attempting to feed, for robbing one hive, does not satisfy the burglar bees, but encourages them to attack the next feeble colony,

and not unfrequently several stocks will thus be destroyed before their depredations can be stopped.

This feeder is so constructed and arranged, and so harmonizes with the construction of the hives, that there is little or no danger to be apprehended from other bees being attracted to the hive or gaining access into it or to the feed, as the feeder is placed in the case, at the side of the brood-hive, near the top, with a small communication into the feeder, near the top of the hive, and therefore the robbers must pass up among the bees and combs through the body of the hive, to gain access to the feed. This they will not do, if the instructions are followed, which are: "to nearly close the entrance tube while feeding, leaving a space of only half an inch or so, that only one or two bees can enter at a time." In this condition a few bees are able to defend themselves against all intruders.



FEEDER AND FLOAT.

Fig 1 is a view of the feed-box. Fig 2, the *float* which is made to fit in it, to support the bees and prevent their becoming mired in the feed while feeding.

Fig. 1 consists of a wooden box made of half-inch boards, and is ten or twelve inches long, six inches wide, and four and a half inches deep, having one or two apertures an inch or so in diameter, near the upper edge, to communicate with the hive while feeding. A square tin pan, two inches deep, is made to fit closely in the box, even with the bottom, and secured there with small tacks.

The float, fig 2, is made of thin slats of light wood, about one inch wide, and one eighth of an inch thick, tacked on to a cross piece at the center, leaving a space between the slats of one eighth of an inch. The under side of the float is lined with strips of cork one eighth of an inch thick, tacked to the wood. A hole, five-eighths in diameter, is made in the center of the float, and a tin tube five inches long fitted in even on the under side. Another thin strip two inches wide is fitted across the top of the box, with a hole in the center one eighth of an inch larger than the tin tube, to receive it; and on each side of this top strip, a pane of glass is fitted to *confine* the bees, and afford means to observe their operations while feeding. By means of the tin tube, the float can be raised when the feed is put in the feeder, and the feed poured through it with a tunnel. The float can then be eased down on the feed, and the bees come on to it and feed through the apertures between the slats without being mixed and drowned in the feed. It is *surprising* and also *amusing*, to see how eager they are to remove the feed and store it in

the hive. An ordinary family of bees will frequently remove a pint of the feed in an hour, and usually from one to two quarts during a night; and it does not retard them in the least from gathering from the field on the following day.

The feed may be made of poor, unmerchutable honey, or honey and sugar *mixed*, and prepared with water. Southern honey also answers a very good purpose for feeding, merely to sustain the bees through the winter; or, when cleansed and mixed with crushed sugar, makes a very good article for the table, *after being worked over* and stored in the combs by the bees. They also construct combs from the feed, as white and beautiful as any other. For feeding receipts see *ante*, page 285.









