

MAKING HOME PROFITABLE

KATE V. SAINT MAUR



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Title: Making Home Profitable

Author: Kate V. Saint Maur

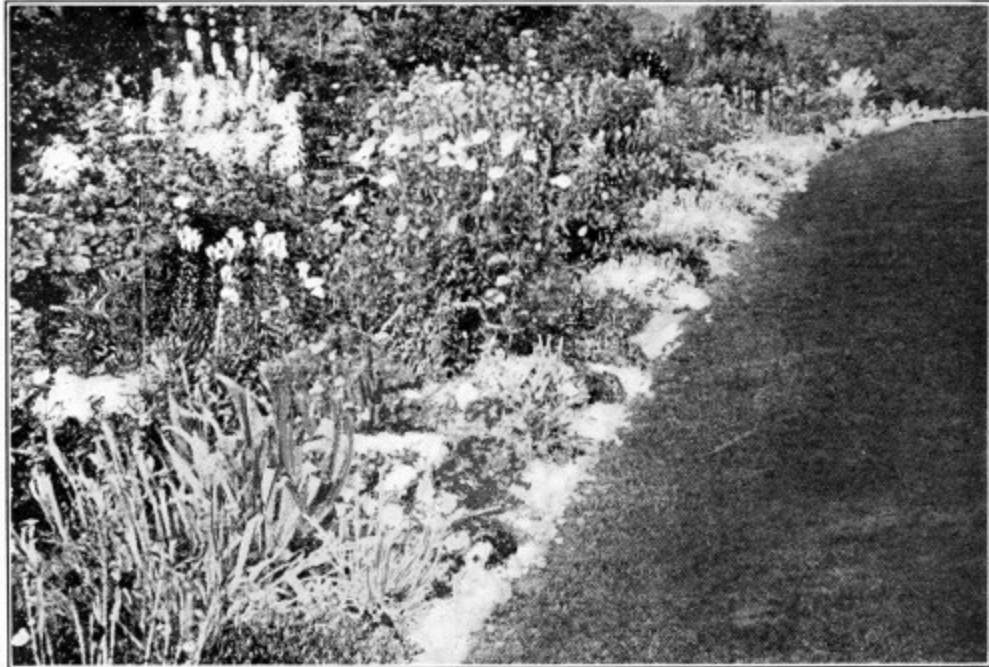
Release date: February 25, 2019 [eBook #58962]

Language: English

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PROFITABLE ***

MAKING HOME PROFITABLE



A BORDER OF HARDY PERENNIALS



MAKING
HOME PROFITABLE

BY

KATE V. SAINT-MAUR
AUTHOR OF "THE EARTH'S BOUNTY," ETC.

ILLUSTRATED

New York
STURGIS & WALTON
COMPANY
1912

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Set up and electrotyped. Published April, 1912

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A PROFITABLE HOME

IT is just sixteen years since misfortune brought about our emancipation. A disastrous business venture made it necessary to curtail expenses. Rent being an especially heavy item, the hunt for a cheaper habitation commenced. Toiling up and down innumerable stuffy staircases in tow of slatternly janitors revealed the fact that cheap flats were either over-crowded barracks redolent of dirty soapsuds and stale cooking, or overdecorated cubbyholes where children were tabooed. Evening after evening for two weeks I returned home weary and discouraged.

Then chance, in the shape of a poultry show, came to my relief. Instead of a cheap flat and semi-dark rooms, why not a house and garden, where we could have chickens, eggs and vegetables of our own? Friends scoffed; and even my husband, who had always joined me in planning the ideal home of our old age, as a place far from the noise and rush of the city, where we could indulge our love of flowers and animals, demurred at first, though he eventually became imbued with my enthusiasm, and told me to go ahead if I felt equal to shouldering the responsibilities which city duties would obviously prevent his sharing.

He stipulated also that transportation to and from his business in the city, and all other expenses, should come within the newly necessary curtailment of expenses, which limited rent to twenty-five dollars a month and the housekeeping allowance to twelve dollars a week; that none of our very limited capital should be risked, excepting one hundred dollars to cover expense of moving, etc., and that even this sum should be considered as a loan. To satisfy the dear man's cautious, masculine ideas of fairness, I took twenty-four hours to consider the conditions, and then, with solemn, businesslike gravity, accepted.

A painstaking advertisement in a Sunday paper, stating plainly that we wanted a small farm near the city and a railway station, the rent not to exceed

fifteen dollars a month, brought dozens of letters offering all sorts of places at all sorts of distances and prices, but only six real answers. With the writers of these six letters I corresponded; studied innumerable railway guides; took several fruitless journeys; hesitated about two or three places, then just stumbled upon the right place.

It is like choosing a new hat or garment. You like that one, but this one is more becoming. You suddenly see something else quite different—hesitancy is over; the unconscious ideal is found.

The house was long and low and white, standing at the end of the road, facing a somewhat neglected, old-fashioned flower garden, which verged into five acres of orchard bounded by a river. The man who was driving me didn't know to whom the place belonged. I got out, looked in at the windows, made out that there was a wide hall through the centre and two big old-fashioned fireplaces and a lot of odd cupboards.

Outside there was a wood-shed, summer kitchen, small smoke-house, barn, cow shed, corn-crib and chicken house. My original destination was forgotten. I was driven back to the station; found out who the owner was, and where he lived; drove over there, and ascertained that the house contained four large rooms and one small one, kitchen, pantry and two cellars downstairs, and five rooms and an attic upstairs.

There are one hundred and eighty acres of land or more, but the landlord would divide it to suit good tenants, which he evidently thought we would be, for subsequently we arranged to take the house, buildings, orchard, twelve acres of farm land and four acres of woodland on a three years' lease, at a rental of fifteen dollars a month, with the privilege of taking the remainder of the land at any time during our tenancy for an extra five dollars a month, and an option of purchase.

Really, it seemed too good to be true, for it was within the prescribed distance from the city and depot, the price of commutation being only six dollars a month. The river, the old-fashioned garden with its two great catalpa trees shading the house, and the beauty of the surrounding scenery, made it almost a realization of our ideal home. Thankful joy filled our hearts even before we had experienced the glorious invigoration of an industrious

outdoor life on the farm, where each day brings some new interest.

All our goods and chattels, including two cats and a canary, were packed in two vans, which took them the entire twenty-eight miles for thirty dollars. A kitchen stove cost thirty-five dollars; three wash tubs, four lamps and a few necessary tools absorbed another twenty-five dollars; and the last ten of the hundred dollars was spent in straw matting, which we divided between two bedrooms.

Of course, I had to start at the very bottom of the ladder, buying only with the money that I could save from week to week from my housekeeping allowance. A few hens, a few ducks, gradually through the poultry family, then an incubator and brooder, to the dignity of a horse and cow; after whose acquisition, the home became self-supporting, the third year showing a surplus profit.

Of course, there were difficulties and troubles to be overcome, but they were all the direct result of my own ignorance. A friend well posted in country-home making, from whom I could have acquired vicarious experience, would have prevented most of them. Hence my desire to pass on to practical lessons, learned during the last sixteen years, for the benefit of other women.

Our old-fashioned white house and shady garden might not appeal to every one, but no matter what individual taste may demand in architecture and environment, there are certain points which must be observed to insure the health and happiness which we all desire. The house must be on high ground, with good subdrainage. How to be sure of the latter point puzzled me, until an old real-estate man, in answer to my praise of a place we were passing, said:

“Handsome? Yes, but it is a death trap. Dig a hole six feet deep anywhere around the house, and in twelve hours there will be water at the bottom of it.”

Needless to say, this place was not on his list, but the hint was a good one and has been remembered. Wet meadows and spring ponds may give no anxiety, but stagnant water is dangerous, for it breeds mosquitoes and malaria. Fortunately, it is generally easily abolished; an able-bodied man with a shovel can usually dig a gutter to some near-by fall in the natural grade of the

land that will drain it. Mosquitoes were one of our troubles for two years; then three hours' work banished their breeding-ground.

As it is a permanent home, and not a summer camp, which is being selected, shelter from cold winds is important. The woodland on our place protected barns, house and orchard. If there is no natural wind-break, and the place is satisfactory enough otherwise to make you contemplate buying it in future, it will be wise to plant out quick-growing trees, which usually can be bought for little or nothing in the country, and transplanted when quite a good size. Inexpensive country houses do not have furnaces, and like us, you may not be able to afford one for a year or two.

We found that two large stoves, with the pipes arranged to pass through the ceiling and into radiators in the rooms above, and thence into the chimney, would heat four rooms. The pipe of the kitchen range can be utilized in the same way. Stoves with cracks and poor fire bricks waste fuel and warmth, so don't try to economise on stoves.

We have always used an open hearth in the living-room, because it looks so cheerily comfortable, and a door at the opposite end of the room opens into the dining-room, allowing the air from there to come in, and so preventing the cold backs which are the usual drawback of a picturesque open fire.

One of the joys of depending on stoves is being able to regulate the heat in each room to meet all conditions. Our apartment in town was of the better class, yet just as surely as an extra cold snap arrived, so surely did the heating apparatus get out of order. Another horror was the "kling-kling" of the pipes in the dark, uncanny hours of the morning, when every well-regulated human being ought to be allowed to sleep in peace.

Having plenty of wood, we used what are called "air-tight chunk stoves" instead of coal, excepting in the kitchen. And truly we have never experienced any trouble in keeping the entire house *hot* in the bitterest weather. But we took precautions, such as keeping the putty around the window panes in good order. We used sandbags on the ledges, mats at the doors, and red building paper (which has no odor) or several thicknesses of newspaper under the floor covering. Then we opened most of the windows for a few minutes every morning, and let in fresh air.

People rave about the pleasures of the country in summer, but I think city folks more thoroughly realise the joys of a country home in winter. We found something delightfully restful about the crackling log fire on the open hearth, around which the whole family could gather. There is a “hominess” about it that can’t be found by the side of a steam radiator. And could any specialist prescribe a better panacea for a business man’s overwrought nerves? There, I am letting my enthusiasm for country pleasure interfere with the practical help I set out to give. And even now the joys of skating, sleighing and tobogganing have not been cited.

Making the home comfortable in hot weather is a very simple matter. A house has four sides—one for each point of the compass—so open windows and doors, and catch whatever breeze there is. Wire screens are cheap; besides, care in not allowing garbage and water to stand around the premises will mitigate flies and mosquitoes.

If fate or your fancy has settled you in a new place minus old trees to shade the lawn and porch, wire netting and wild cucumber vines, which grow very rapidly, will furnish a substitute. For keeping provisions I found a well-ventilated cellar better than the best refrigerator. We take out the windows and replace them with two thicknesses of flannel, which are thoroughly saturated with water. At noon time on a hot day evaporation lowers the temperature several degrees, yet the current of fresh air is not obstructed, as it would be with closed windows.

Well or spring water is usually refreshingly cool, so an ice house is really not imperative, though I recommend building a small one if the farm provides good ice, for it is an inexpensive building to construct, rough boards, sawdust and the ordinary handy man’s labor being the only requirements. We did not have one for several years, but then we had a spring-house with a stone floor and shelves, and a wide gutter running all around, through which the water from the spring was conducted, keeping the place almost icy.

Modern improvements are never to be found in inexpensive country houses, so we found that a bathroom or some means of taking an all-over scrub would have to be constructed immediately. We bought a full-sized tin bath tub with a wooden bottom for about seven dollars, and placed it in the little room off the kitchen. A piece of rubber hose was bound tightly to the escape

pipe of the bath tub, and carried through the wall out into a box drain, thence to a barrel ten feet from the house, which had no bottom, and was sunk into the ground. From there, of course, the water seeped into the subsoil and disappeared.

We thought it was very fine indeed at first, but later, when our ideas and finances broadened, we replaced it with a porcelain enameled tub and wash bowl, with properly soldered waste pipes into a tile-drain sink three feet deep, to prevent freezing.

A pump over the kitchen sink had been the only water supply, but as that was drawn from a splendid spring several feet above the level of the house, we determined, when investing in a new bathroom outfit, to stretch the purse strings a little further, and put in hot and cold water. A waterback was attached to the kitchen stove, and a sixty-three-gallon boiler attached. It cost twenty-two dollars and seventy-five cents. The bath and basin cost thirty-eight dollars. Fifty feet of one-and-one-half-inch pipe, seven dollars and fifty cents. One hundred feet of half-inch pipe, six dollars. Waste pipe, two dollars. Labor, twenty-two dollars.

When a spring is not conveniently situated, an automatic ram and a cistern will have to be used, and I am told that they would cost about seventy dollars more. Even with the new arrangement of the bathroom, we retain the earth closet, which had been bought some time before, at a cost of twenty-five dollars. It stands with its back to the outer wall, through which a trap-door was cut, to permit the removal and replacing of pans and earth. This is undoubtedly the most inexpensive and sanitary contrivance with which a country house can be furnished.

The next comfort was a telephone, which cost only eighteen dollars a year, including local calls, long-distance calls, of course, being extra charges. That, with the rural delivery and daily paper, brings us stay-at-homes in touch with the great doings of the world and the little interests of our friends.

We deserted the city in March, but experience has taught me that the fall is the best time of the year in which to migrate. There are not so many people looking for country places; the days are bright and cool, the roads in good condition, and there is much that can be done in the garden and orchard to

facilitate next spring's work. By starting poultry in the fall, one can have broilers ready to catch the early spring prices. Moreover, it is the early chick that will make a good layer the following winter.



In the following chapter we will carry the housekeeping into the poultry yard, for that is the best starting point for a self-supporting home.



POULTRY

AS poultry was the stepping stone which enabled me to reach the haven of a self-supporting home, I naturally consider it the best foundation on which a city woman can build her expectations of rural prosperity. I suppose—and I certainly hope—that every woman won't have to begin with just two or three birds, as I did; but those who may have to, should find my first six months' experience comforting.

Twenty-one mongrel hens were bought in three detachments, costing fifty to seventy-five cents each. They were nearly all old ladies with strongly developed maternal instincts, who delighted in sitting on eggs and brooding chickens, so we managed to rear one hundred and forty-eight chickens. We had from three to four eggs a day for the table, because we desired to keep only White Wyandotte hens in the future, and eggs for hatching were bought from a near-by farm, and cost altogether six dollars, feed for six months cost four dollars, making a total outlay of twenty dollars and fifty cents. Ninety chickens were sold as broilers, realising twenty-two dollars, so the actual cash profit was only two dollars.

But there was an increase in stock to fifty-eight pullets, all worth at least one dollar and fifty cents by the end of the sixth month. By November 22d they were all laying, the average number of eggs being twenty-five a day, when strictly new-laid eggs were bringing from thirty-five to fifty cents a dozen, a record which I think truly justifies me in recommending Biddy as the pioneer factor in economical home making. Even well-bred, industrious hens must have good conditions and care to be profitable.

There are innumerable breeds and varieties of breeds, the most popular at present being Plymouth Rocks, Barred, Buff, and White Wyandottes, Silver-Laced, White, Buff, Golden, Partridge, and Black; Rhode Island Reds, which have a plumage somewhat similar to the old-fashioned game bird, and vary only in having both rose and single combs; Minorcas, Black and White;

Andalusians, about the shade of a Maltese cat, single combs; Leghorns, Black, Brown, Buff, Duck-Winged, Silver, and White.

Plymouth Rocks and Rhode Island Reds are very good birds and probably the latter would be my selection, if anything could persuade me to desert White Wyandottes. The chicks of the three foregoing are all strong and easily reared, but the Wyandottes make plump broilers at a slightly earlier age, maturing perhaps a week or two earlier than the others, which are equally good roasters. I do not know that there is any material difference in their egg-producing capacities.

Leghorns, Minorcas and Andalusians are much smaller birds and are considered to be the egg machines of the hen family; but observation has convinced me that they fall far behind the three heavier breeds quoted during severely cold weather, when eggs are most valuable. Hence I always recommend Wyandottes, Rhode Island Reds or Plymouth Rocks for general utility in the vicinity of New York or further north, and the Leghorns, Minorcas and Andalusians for the Southern states, especially when eggs are the only consideration, and the birds can have free range. One of the great drawbacks to the latter birds is their ability to fly or climb over fences of almost any height, while the 'Dottes, Rocks and Reds are easily controlled in yards that are not over four feet in height.

Whichever individual fancy or environment decide you in keeping, be advised by one who has bought her experience: Don't attempt more than one breed at a time, and shun a mixed flock of nondescripts, for it would tax the perspicacity of a Solomon to feed correctly a tribe of mongrels.

Of course, by pure-bred birds I don't necessarily mean expensive prize winners. That would be foolish extravagance. But all large poultry plants have what are termed "market stock" for sale in the fall—the progeny of aristocrats, but lacking some necessary point for show-room honours. Such birds can be bought for about a dollar and a quarter each, and will answer every practical purpose.

Male birds need not be bought until about three weeks before the eggs are wanted for incubation. Then, if your choice should have been Wyandottes, Plymouth Rocks or Rhode Island Reds, each flock of seven hens should be

headed by a cockerel. Leghorns, Minorcas and Andalusians can run fifteen hens to a flock. The male bird should be as good as you can afford, for by such means you can gradually improve your stock, until it reaches perfection. It is safer to buy the cockerels from breeders far distant from the original home of the hens, to avoid any danger of relationship.

Whenever new birds are bought, segregate them for a few days in some small house and yard, to assure yourself that they are healthy and fit associates for your birds. Catch the birds, one by one, each night, while in quarantine. Hold by the feet, the head down, and saturate the feathers with some good insect powder from an ordinary flour dredger.

The poultry house should be whitewashed about every six weeks in hot weather, and as late and early in the fall and spring as the weather will permit. Scatter dry earth or sand on the platform; clean and renew every day. Once a week paint the corners of nests, roosts and any other fixtures or roughly spliced joints in the building with kerosene oil and crude carbolic acid, mixed in the proportion of one pint of oil to half an ounce of carbolic. Leaves or whatever scratching material may be used on the floor should be raked out once a week in hot weather. All cleanings should be put into a heap under shelter, or into barrels, for poultry droppings are invaluable fertilizer for the vegetable garden.

Dry, cold weather doesn't hurt the hens at all, but after winter rains or heavy snow they should be confined to the house, and unless the weather is exceptionally inclement, all the windows thrown open between 9 A.M. and 2:30 P.M. Very stormy days we keep them open only while the hens are busy scratching for the noon supply of corn.

It is the industrious, busy hen that produces the most eggs, so the first consideration is to keep the flock busy. We promote exercise by having the small yards at the back of the houses repeatedly dug up during the spring and summer. In the autumn the dry, falling leaves are collected, and used on the floors of the houses during bad weather. Fresh, cold water is kept constantly before them in stone vessels in summer, and in a padded-box arrangement in winter.

Boxes of clean, dry soil are placed in sunny spots in the house, to encourage

the birds to take the dust baths in which they delight. Hens, having no teeth with which to chew their food, are dependent on grit to perform the office of mastication after the food has passed into the bird's gizzard, where a sort of grinding process takes place, which reduces hard corn to a digestible compound. Being near a stone crusher, we buy the fine gravel by the load. Those not so fortunately situated will find a specially prepared mixture at any poultry-supply store, or the small flock can be supplied by smashing broken crockery and glass into pieces about the size of hemp seed. Oyster shell is a very poor substitute for grit, its value being the lime it supplies for the formation of shell.

Fowls are better off kept in yards; in fact, they must be so restrained if the highest egg records are to be reached. In way back times, it was considered a great detriment to yard fowls, but for some years past professional poultry-keepers have yarded their fowls, because they found it was the only way to reach the top notch. Even now the general farmers still adhere to the free range idea, and I am convinced that it is not purely because they think it necessary, but it saves feed and other bother. It has been estimated that a flock of common dunghill hens, such as are seen in the average farm, lay in a year less than a hundred eggs each. The figures are eighty to ninety. Farmers who have become breeders, and who thus give the hen decidedly more consideration, and still adhere to the free range system, have increased this yield to one hundred and fifty and better. Breeders who have followed the strictly up-to-date methods, and have yarded their layers, have obtained an average of one hundred and seventy-five eggs, and some have even reached the two hundred mark.

Please note that I say fowls or hens, and I do not mean this to include growing chicks. The line must be distinctly drawn between the two. The range cannot be too extended for growing stock. What we strive for in growing chicks is frame, on which later we intend to put flesh. This frame can only be built by food, and plenty of it, converted into bone and muscle by exercise. After the chick has made the frame, we can safely yard her and put on the flesh, and thus convert her into a money-earning machine.

The advantages gained by yarding stock are manifold. First of all, by confining stock to a certain space, we are sure they eat the food provided and

in the quantity we mean them to have. Feeding layers to produce eggs is becoming every year a more delicate operation. Formula after formula is tried by different breeders, as an experiment, with the hope of increasing the egg yield. If we can force each hen to lay ten a year more, it means a considerable increase of the total of the flock, and a better return in dollars and cents to the breeder. Yarding stock is a means toward this end. The food fed is converted, as we mean it to be, into eggs, and not into muscle. It is decidedly more troublesome to care for stock in this way, and necessitates additional labour and expense, but we are looking for the increase all the time, and are thus continually hoping to be compensated for the extra trouble.

Fowls in yards must be supplied with everything they require, which means, all they would naturally seek if running at large. This includes, besides the grain we feed by formula, green food, meat, a scratching place and dusting spot, and grit and water. Of all these I consider green food the most necessary, and the one thing to be impressed upon the mind, because it is the one thing too often forgotten. Green food of any variety is acceptable. The ideal yarding of fowls is what is known as double yarding—a house in the middle and a yard on each side. These yards can be sown with rye or oats, and alternated so that the fowls will have a constant green run as long as the rye or oats will grow, which is until frost. Failing the double yard system, green food may be supplied by lawn clippings, whole cabbage, clover hay or sprouted oats, fed in a variety of ways. Turning up the ground of the yards with a cultivator or by shallow ploughing, will bring the worms and bugs within reach, or sheep heads cut open and fed raw can be thrown in, and this is an ideal meat food. Ground beef scraps may be mixed in mash—and last, and probably the best, cut green bone.

Yarded fowls need exercise. It must not be understood that because they are confined they do not get exercise, or as much as if let run at large. The yards should be at least one hundred and fifty feet long, if they are the width of the average coop, which is ten to twelve feet. Some breeds are decidedly more active by nature than others; for instance, the Leghorns as compared to the Cochins or Brahmas. This does not affect the health of the fowls particularly. A Leghorn is no healthier because of her activity than a Cochin is. It is simply the difference in their natures, but because of this excess of activity of one breed over another, the one must have more room than the other. The

Leghorn stands the confinement of a coop ten by twelve feet in winter, provided she can be kept actively hunting for her food; but the same bird would mope and become out of condition if confined too long in an exhibition coop in a show room. On the other hand, a Cochin, being of a lazier nature, forages slowly, and wanders quietly over her yard, takes things easy in the winter coop, and stands the confinement of the exhibition coop excellently.

The foraging nature of any breed can be killed by excessive feeding. Even birds with free range, if overfed at special meal hours, will take but limited exercise, exactly as those treated the same way and yarded. Exercise is induced by short feeding. In other words, no laying strain should be fed all they can eat except at night. Hunger induces exercise, whether a fowl be let run or yarded. Therefore, fowls fed short and induced to hunt for more, will lay eggs, while those overfed, in the morning especially, will sit around moping in the sun, and convert the food into flesh instead of eggs.

Another advantage of yarded fowls is the certainty of finding all the eggs laid every day, and then being able to guarantee them as strictly fresh. This is a point of great importance, and constitutes the difference between eggs produced by an up-to-date breeder with yarded fowls, and those sold by the “honest” farmer who collects them wherever found, and cannot swear that they were laid to-day, not two weeks ago.

The wise poultry keeper will not delay getting things in order for the breeding season. New blood is necessary to keep up the vigour of the flock. Buy the best male bird you can afford. The rooster is more than half the flock. A good bird will grade up young stock next spring. Remember even if you have pretty good birds of your own rearing, there is danger in inbreeding for more than one season.

Select only the largest, brightest hens for the breeding pens. Reject any which have shown signs of illness at any time of their lives. The eggs are the main point; only the best layers should be selected. From seven to twelve birds are enough for one flock. If you haven't the coops, or a long house divided into compartments with accompanying yards, and can't divide your birds into small flocks, adopt the alternating plan. Keep several male birds in a house and yard separated from the hens, and let only one run with the hens at a

time, alternating them every day or every week, according to the number of hens. For example, if I were compelled to keep fifty hens in one flock, I would keep seven male birds, and let each one in turn run one day with the flock, rather than allow three or four birds to remain with the flock all the time.

Now is the time to overhaul things. There is no opportunity when spring comes, for then there is always a rush, and you will bring trouble on yourself by using coops which haven't been properly cleaned, or which have no fastenings, or have broken hinges or leaks in the roof. The boys want something to amuse them during the winter evenings; get them interested in showing off their mechanical skill by making feed-hoppers and drinking-fountains. Self-feeding hoppers save a great deal of food, especially round brood coops. They prevent the grain being spilled or trampled into the ground or spoiled by thunder showers.

The brand of tea which we use in the house comes in square pound tins, and these we convert into self-feeders by cutting out two inches of the front an inch from the bottom, and fitting a sloping false bottom inside. Any handy boy can look at the picture of a self-feeder in a catalogue, and make one that will be just as serviceable. Pound baking powder cans can have a hole the size of a pea cut about an inch from the top, and when filled with water and turned upside down in a two-inch tin pan make capital little drinking-fountains for brood coops, and cost only five cents for the dish, so there is no excuse for not having plenty of them, and they save chicks getting drowned or the water getting defiled, which is usually the case when open dishes are used. Having all the little things ready and in order counts for a lot in the spring, when everyone has more work than he can comfortably do.

At least two-thirds of the letters I receive are about "mysterious" cases, nearly all of which are due to the presence of vermin in the houses. Most of the women who write seem to be horrified when they find their hens infested by such pests, but my experience has been that it is the nicely-kept, presumably clean, house and flock which is apt to be the worst. Why, is a puzzle, unless it is that women are apt to keep their fowls' home so tidily clean that one never thinks of hidden troubles, and for that reason the house and flock are never drastically attacked, as they should be, with eradicators

and preventives. And, naturally, the hidden pests multiply undisturbed, and infest the whole place before their presence is suspected.

Few people know that there are any number and variety of pests which are difficult to discover because of other secretive habits. For instance, there is the depluming scab mite, which is a very minute, vicious pest, that often causes hens to be accused of feather-pulling, when in reality the poor things are only trying to rid themselves of intruders who cause them positive torture. When a bird is noticed to have bare places on neck or back or body it is well to catch it and pull out one of its feathers near the bare spot. Ten to one you will find a scaly collection near a quill. Rub it off on to a sheet of paper, and examine it under a magnifying glass, and you will discover that every grain that looked like dandruff is a living mite. Another tiny atom, which buries itself under the skin of fowls' legs, causes itself to be known as "scaly legs." Many of the mysterious deaths can be traced to another variety of the same family which attacks the air-passages of the bird's throat, and occasionally reaches the lungs. The affected bird gets drowsy, mopes about for a few days, and at last dies from suffocation, and people wonder what has been the trouble. Then there are three varieties of fleas, so dark in colour that they look almost black, which live in the soil, or in cracks and crevices of the poultry houses, and sally forth when hungry to feed on the poor defenceless hen. One species of these crawls, instead of hopping like the ordinary flea, so people frequently make the mistake of thinking that it is a plant insect which will not molest poultry. It is all these unsuspected visitors which attack poultry at night, rob them of their vitality, and the poultryman of much of his profits.

Long ago, when I first started my poultry plant, I found a recipe for liquid louse exterminator and a worm powder published in some magazine recommended by Dr. P. T. L. Woods, the great poultry expert. The liquid is easily made, and very cheap. Dissolve crude naphtha flakes in kerosene oil. Motholine and naphtha camphor are two preparations put up in packages, which can be bought at any drug store, and would do as well as the flakes, if you have any difficulty in getting them. A Boston firm puts up a preparation with aromatic naphthalens and camphor, in packages which cost twenty-five cents, and is very good. One package dissolved in two gallons of kerosene makes a good mixture to spray house, nests and roosts. For the birds themselves, paint the inside of a box with the liquid, and keep a bird in it for

from fifteen to twenty minutes. I had a box made with a compartment one foot square, so that we could treat six birds at one time. Near the top of each compartment there is a hole large enough for the bird to put his head through, and outside we put a trough which is slightly raised from the ground, so that the birds can just reach the contents. Fill it with small grain, and they keep busy most of the time, which insures their not being smothered, and their necks passing through the hole prevents the fume of the wash escaping too rapidly. Of course, someone must remain and watch the birds all the time; otherwise there is the danger of the bird pulling its head in and being suffocated. To be sure that the bird is perfectly clean, fumigation should be repeated three times, with an interval of three days after each. If houses are kept clean and all new birds are thoroughly fumigated before they are turned into the flock, it will not be necessary to attack the whole flock more than once or twice a year. Nests for setting hens are always swabbed out with the mixture, and brood coops get a dose once a week. As soon as any hen shows signs of getting broody, she is dredged with powder, which is well rubbed down into the "fluff" of the feathers; then on the tenth and nineteenth days she is again well powdered, and from the time the chicks are a week old she receives a dose of powder once a week as long as she broods them. The recipe for the insect powder is as follows:

To one peck of freshly slaked lime add half an ounce of carbolic acid. Mix very thoroughly, and add same quantity, in bulk, of tobacco dust. Another powder recommended by Dr. Woods in the same article, and which I have used very frequently, is made by mixing equal parts of finely-sifted coal ashes and tobacco dust, then moisten the whole with the liquid louse exterminator. Allow it to dry and it is ready for use. When purchasing carbolic acid, ask for ninety per cent. strength, otherwise they are very likely to give you a much weaker preparation, fit only for medical use.

THE SITTING HEN AND THE INCUBATOR

LOOKING back over the memories of my farm initiation, it seems as if I had not fully realised the possibilities of my new undertaking until the first incubator was inaugurated. As I have already told you, I did all the first year's hatch under hens, and still set every hen that evinces any desire to assume the cares of motherhood, because it seems Nature's plan to keep the egg machine in good working order. If a broody hen is not allowed to sit, it takes several days of incarceration to break up her desire, then several days more after she is freed before she commences to lay, and invariably the sitting fever will attack her again within a few weeks. Now, incubation takes only three weeks; brooding of chicks, another four or six weeks, and Mrs. Biddy has had a complete rest, followed by vigorous exercise while scratching for her babies. So when she is returned to the yard she is in perfect condition to produce eggs. Let Biddy sit whenever she wants to, but don't wait her pleasure in the early spring, for you might have no young chickens to sell when they bring good prices.

THE SELECTION OF THE INCUBATOR

There are a great many incubators on the market, some heated by hot air, others by hot water. If you select any one of the standard makes advertised you will get a good, practical hatcher. Printed instructions for setting up and running are sent out with every machine, but they don't emphasise all the important points quite strongly enough for amateurs. Lots of people can't drive a screw home accurately, and fail to realise that if the head is slightly to the right or left it throws the fixture which is being attached to the machine out of plumb, and a hair's breadth makes a difference when such delicate appliances as thermostatic rods (the power which controls the heat), are concerned. A blunder supplies much knowledge. I should never have realised the necessity for absolute exactness if one of the screws used in attaching the

lamp support to our second incubator had not gone slightly awry. It caused the chimney almost to touch one side of the socket into which it fits. That, in turn, drew the flame to one side, and caused it to smoke at night when turned up for extra heat. It was a very little blunder, apparently, but it almost spoiled the incubator, and quite spoiled the hatch.

To be sure that the incubator fixtures are plumb, use a spirit level, the only safe guide. After starting the machine, practise running it for a few days before putting in the eggs. When the heat reaches one hundred and two and one-half degrees, with the escape dial hanging the width of a match from the opening, put in the trays, which, being cold, will lower the heat, and should close the dial until the trays become warm, and the thermometer in the machine again registers one hundred and two and one-half, when the dial should once more be dangling the match width above the opening. Should the closing and opening not take place as the heat varies, the machine is not properly adjusted, and you must practise until it will bear the test before putting in the eggs.

The thermometers are supposed to have been tested before they are shipped, but it is well to buy an extra one and compare them; or get your doctor, who is sure to have an accurate thermometer, to do it for you. The egg tester comes with the incubator. It is a tin, funnel-like chimney that fits over the lamp, and has a projecting opening, bordered with black, before which to hold the eggs. The first test should be made on the seventh day; the second on the fifteenth day. Hold the egg, large end uppermost, in front of the opening. If it looks perfectly clear it is infertile and can be used to feed young chicks. If it shows a dark-red spot with spidery legs it is fertile, and must be returned to the incubator. Dead germs are rarely discernible at the first testing, except to the expert eye. By the fifteenth, the veriest amateur will be able to detect them.

Successful incubation depends principally on being able to maintain the amount of heat and moisture necessary at the different stages of development. A thermometer is furnished with most incubators, but as yet hygrometers are not, so it is advisable to buy one. For as they only cost \$1.50 each, it would be pennywise and pound-foolish to do without one. Having these two little instruments to tell exactly the amount of heat and moisture present in the

machine, simplifies the work wonderfully.

Personally, I like to have the thermometer register 102 degrees, and the hygrometer 75, when I first put the eggs in the incubator. The second week, the heat is increased to 102½, and the moisture lowered to 70 degrees. The third week, heat from 102½ to 103; moisture not over 45 until the nineteenth day, when the moisture is again increased to 55 or 60 degrees.

The reason for such fluctuation in the moisture may need some explanation. During the first stages of incubation it is necessary to prevent the escape of the water which is part of the egg, as it is needed to keep the albumen in the right condition for the development of the germ. After the tenth day, when the embryo is formed, the water should be gradually allowed to evaporate, so that the amount of air inside the shell increases, as it is needed to aid the circulation of the blood and permit the growth of the chick. Increasing the moisture again on the nineteenth day is simply done to soften the inside skin of the egg and make it easy for the chick to break through.

When extra moisture is to be supplied, place a pan of wet sand or a damp sponge in the bottom of the incubator. If the machine is standing in a very damp cellar, the difficulty is often to keep down the moisture rather than to increase it.

In this case, keep the trays out of the machine for a greater length of time when you turn the eggs each day, and open the ventilators. Probably the safest and simplest way to learn how to gauge this important point of moisture, is to set a hen at the same time that you start the incubator, and then compare the development of the air-cell in the egg every few days. If the development is too slow, open the ventilators at the side of the incubator wider, and air the eggs a little longer each day when you have the trays out to turn the eggs. Reverse affairs if the development is too quick. It is better to run the machine a degree or two above the given temperature than below it, especially during the last few days.

After the morning of the twentieth day don't open the incubator until the hatch is over, or until late on the twenty-second day, and don't get nervous if the temperature runs to one hundred and four or even to one hundred and five; it is caused by the animal heat of the chicks, and will do them no harm.

Turning down the lamp slightly will of course reduce the heat; but be very careful not to let it run below one hundred and three during the last twenty-four hours. Low temperature prolongs the hatch, weakens the chickens and makes them susceptible to all sorts of ailments.

Individual outdoor brooders I think are the best, for in very cold weather they can stand in a light outhouse. I used to monopolise the summer kitchen from February to April, and then have them placed out in the orchard. Placing an outdoor brooder under cover is really only for the convenience of the attendant, for they are storm proof. If you commence with an incubator that holds one hundred and twenty to one hundred and sixty eggs you will require two brooders, and if in a cold or Northern locality, some small house which can be warmed during very cold weather, if you propose commencing to incubate in January. A brooder supposed to hold one hundred chickens will accommodate that number comfortably for about nine days, after which not more than fifty should be kept in it. Hence the necessity for two brooders. When the chicks are six weeks old in cold weather, and four weeks old in moderate weather, they can be removed to the small house (the temperature of which should be kept at sixty degrees during the night). Remember, incubation takes only twenty-one days, so you must allow at least three weeks to elapse before starting the incubator a second time.

Give the brooder a good coat of whitewash inside before using it. Cover the drum which furnishes the heat under the hover with two or three thicknesses of flannel, to make it soft for the little bodies to cuddle up against. Cover the floor of the hover compartment with a piece of old carpet or felt, and the outside compartment with sweepings from the haymow. Have the heat running steadily at ninety-five degrees for several hours before the chicks are to be put into it, and keep it at that heat the first seven or eight days. Then gradually let it fall to seventy-five degrees. Of course, I mean the heat under the hover. The rest of the brooder will be—and should be—several degrees lower.

THE CARE OF THE CHICKS IN THE BROODER

Keep fresh water in vessels into which the chicks can get only their bills in the outer compartment. Never neglect seeing that they are all safely cuddled up to the heat at dusk.

During the bright, sunny hours in the middle of the day let the chicks have plenty of fresh air in the playroom; at feeding time, when they are all busy, give the hover compartment a thorough airing.

When Biddy is doing the brooding, remember she is pretty sure to need dusting with some good insect powder. The nest box she sat in should have been cleaned, and a handful of camphor balls scattered under the hay of the nest. Moreover, each hen should be dusted before setting, twice during the twenty-one days, three days after the hatch is out, and each week so long as she broods the chicks.

Fresh air, warmth and good food prevent many troubles almost impossible to cure if once contracted; so look to the little things.

Thirty hours must be allowed for the proper digestion and assimilation of the yolk, which is absorbed into the abdomen immediately before the chick breaks through the shell. When Biddy has done the hatching do not move her to the brood coop for twenty-four hours, unless she is flighty and keeps getting off the nest, in which case it is better to keep the chicks in a covered box by the kitchen stove until some more motherly hen can be persuaded to adopt them. Always try to set two or three hens at the same time. Good hens that are well fed and have not been bothered with vermin seldom give any trouble about the last twenty-four hours.

HOW TO DIVERSIFY THE DAILY RATION

Now about the all-important question of feeding: For the first two or three days get ten pounds of rape and millet seed, pin-head oatmeal and cracked corn, charcoal, and fine, sharp grit. Mix all together. If you cannot get pin-head oatmeal, buy hulled oats and break them up fine. The grain must also be cracked quite fine; in fact, it is safer to put the mixture through a sieve which

will allow nothing larger than millet to go through. Then there is no danger of chicks being choked. Feed the mixture by scattering among the sweepings, to encourage the chicks to scratch and take exercise.

Morning and evening make a mash by chopping a hard-boiled egg, shell and all, green onion tops or sprouts. Mix with stale bread crumbs, and feed on a flat pie plate or strip of wood. After the chicks are two weeks old the oats and corn need not be quite so fine—more the size of hemp seed, which can be added to the mixture; so can cracked wheat or barley, and the mash can be made of ground corn and oats, with onions and scalded liver, chopped, three times a week (about a small cupful to a quart of mash).

What I mean by scalded liver is liver dropped into a kettle of boiling water and let boil up once. Leave to cool in the water. Quite raw it is too strong for little chicks. For a change I mix the grain with scalding milk two or three times a week. Never make more at a time than will be fed within the next few hours, as it sours.

Pot cheese is a favourite dish with all poultry, and very wholesome. If there is any tendency to bowel trouble, give them rice water in place of the drinking water.

Keep brooders and brood coops clean and dry. The grass around the coops should be kept cut loose, so that the chicks can run about easily. See that every coop is closed at night, and do not let the chicks out while the grass is dewy. Don't give the hens too many chicks to brood in winter, for if she cannot keep them close to her they will die of chill.



RAISING EARLY BROILERS

A distinct branch of the poultry business, and one that is extremely profitable for those who can run it successfully, is raising young chicks in the winter for early broilers. To commence on a large scale requires as large capital, but there are hundreds of men and women who have accommodations on their premises that would enable them to start in a small way, and by investing the profits from the first year they could obtain a really good equipment for the business.

Of course, the real starting-point should be a good flock of healthy hens, all of one breed, preferably Wyandottes or Rocks, for really the hen who lays the egg has as much to do with the success in broiler-making as the care one may bestow on the business.

Next in importance is a well-constructed new incubator. Don't be tempted to buy a second-hand machine, which has usually been allowed to stand in a damp cellar or in some outside shed while not in use, for it will in all probability warp or go to pieces when put in commission again.

Brooders come third on the list, but are quite as important as the two foregoing, for there is no use hatching a chick unless it can be reared, and the heat and ventilation of the artificial mother is more than half the battle.

The up-to-date broiler plant consists of an incubator-cellar, a nursery, or brooder-house, as it is usually called, and a broiler-house. Both the latter are divided into small pens, about two feet wide and five feet long. In the nursery-house, the top ends of the pens are inclosed like boxes to the depth of about a foot and a half, and have hot-water pipes running through them to furnish heat for the chicks to brood under. A flannel curtain cut into strips falls from the top of the inclosed part to divide it from the rest of the pen, which runs down to the outer wall of the house, where a large window lets in light and sun. The pens should have board floors slightly elevated above the

main floor, to avoid dampness, and the divisions are made with a foot board about nine inches high, and one inch netting two feet high above that. The brooder-house is divided in the same way, but the hot-water pipes only run around the walls of the house, as the birds don't need the immediate heat to brood under, after they leave the nursery, when they are five or six weeks old.

But, until you can afford the proper equipment, one or two incubators can be run in the cellar of the house or an unused room where there is no other heat. Individual brooders can be used in place of the nursery and brooder-house, if you have any light outbuilding to stand them in. In fact, I like the individual brooders better for the nursery period than the pipe-house system, because it is only necessary to heat as many as are needed, and with the pipe system the entire house has to be heated, even if you are only going to use one section.

Most of the different makes of brooders on the market are made with two compartments: A chamber with a round hover, which is heated with a lamp, and an outer compartment for exercise and feeding. The average price is nine dollars, and the machines are supposed to hold one hundred chickens, but seventy-five are quite enough; and even that number should be decreased to fifty the second week, and twenty-five the fourth week—that is, if the chicks are to be confined entirely to the brooder. But if it stands in a warm room, where a small outer inclosure can be made on the floor of the house for a playroom, fifty chicks can be carried through to the squab-broiler age in one brooder.

Chicks hatched specially for the broiler trade have to be steadily pushed along; plump, juicy meat being the main object. The first requisite is warmth. Have the compartment in which the hover is situated heated up to ninety-eight degrees before the chicks are put in and keep it so for the first three days and nights. Keep the door in the outer compartment shut for the same length of time. On the fourth day it can be opened and the chicks allowed to run into it, but the room in which the brooder stands should be warm, and the little ones should be watched toward bedtime, for they are apt to remain in the outer compartment and become chilled.

Being chilled even for a short time is fatal to young chicks, for if it does not kill outright, it causes bowel trouble and gives them a bad setback which will surely delay the day of marketing, if nothing worse. After they are three

weeks old, the door in the outer compartment can be opened, so that they can run out on to the floor of the room. Let them have plenty of scratching material. If the weather is fine and mild, it will do them good to let them have an outside run for an hour or two in the middle of the day, but don't be in a hurry to harden them before they are five weeks old, for it is a risky experiment.

Wyandotte chickens when hatched will weigh two ounces. If all goes well they should gain two ounces during the first ten days; four ounces for the third week; another two ounces in the fourth week, and at the end of the eighth week they should weigh two pounds.

The entire life of a chicken intended for a broiler is so artificial that few if any of the rules for raising ordinary chicks can be applied to them. The great aim is to develop them as quickly as possible, for, to get the best price, a broiler must grow quickly and be plump.

Like all newly-hatched birds, they must have nothing to eat for the first thirty-six hours. After that commercial chick-feed (which is a mixture of all sorts of small seeds and cracked grains) should be their sole diet for ten days.

When there are only small quantities of chicks to feed, and cash is of more value than time, it will be cheaper to mix the feed at home. Take one quart each of finely-cracked corn, bran and hulled oats; mix with the same quantity of golden millet, rape, Kafir-corn and very sharp, fine gravel, crushed charcoal and finely-chopped clover-hay. Mix thoroughly, then pass through a fine sieve, to insure there being no large pieces of the corn or oats for the babies to choke themselves with. For the three days they are confined to the hover department, put a small pan filled with the mixture in each corner and, instead of water, fill a small drinking-fountain with milk which has been scalded and allowed to cool. Leave it with them for ten or fifteen minutes, at morning, noon and again at about 3:00 P. M. It must not be allowed to remain all the time, because the heat from the hover will turn it sour.

After they are allowed access to the outer compartment, mixed grain should be scattered on the cut hay (or whatever is used to cover the floor) so that the chicks will have to scratch which compels them to take enough exercise for healthy growth. The plan is to feed little and often. The milk can be allowed

to stand in the outer compartment, but the fountain must be thoroughly cleansed and scalded every day.

After the tenth day, the door of the outer compartment can be opened and the chicks given further liberty, if there is a stove in the building to warm the atmosphere; but if there is not, don't let them out of the brooder until they are four weeks old. In either case their diet must be slightly changed after the tenth day. Steam some of the chopped clover-hay—about a quart—and add one pint of coarse corn-meal, one pint of ground oats and half a small cupful of chopped liver which has been boiled for five minutes (raw liver is too strong for such young birds, but it should not be boiled more than the five minutes). Feed once a day at noon. Put the mash into two or three dishes, so they can all get a chance to eat at once. Remove any that is left at the end of ten minutes. If it is not possible to get fresh liver, use one teaspoonful of beef-meal or any of the commercial meat preparations which are ground fine. Continue to scatter the dry grains three times a day.

When they are four weeks old, give mash twice a day about 9:00 A. M. and 2:00 P. M., increasing the allowance of meat slightly; and if you have plenty of skim-milk, make cottage cheese and give it to them as an extra once or twice a week. From the fourth week keep a pan containing grit and charcoal always before them. After they are six weeks old increase the quantity of corn-meal in the mash, and correspondingly decrease the ground oats, until all corn-meal and no oats are being used. Also, stop steaming the clover and mix it dry with the other ingredients; then moisten the mash in scalded milk in which suet has been boiled (one pound of chopped suet to four quarts of milk). Boil for fifteen minutes. Feed it three times a day—9:00 A. M., 12:00 M. and 3:00 P. M. The last two weeks before killing, omit all the dry grain; feed nothing but mash, made as before, only as soft as possible without being sloppy. Feed four times a day all they will eat in ten minutes, but on no account leave food before them longer than that, or they will become satiated. Birds pushed along should be in fine condition for market when from ten to twelve weeks old.

Our broilers are never given water to drink, but always scalded milk. Scalded milk invariably checks any tendency toward bowel trouble and is also a strong factor in making the flesh tender and juicy.



THE POULTRY-YARD IN MID-SEASON

BABY chicks are so pretty, and appeal so strongly to the sentimental feeling most people have for infant things, that they are invariably well cared for until they are deposed by new arrivals, or reach the half-fledged, long-legged period of gawky ugliness. Then they are almost surely neglected, especially by the amateur, who does not realise that the intermediate stages are of paramount importance. It is a waste of time and money to hatch chicks and feed hens heavily in the winter, if they are allowed to reach a standstill period during growth.

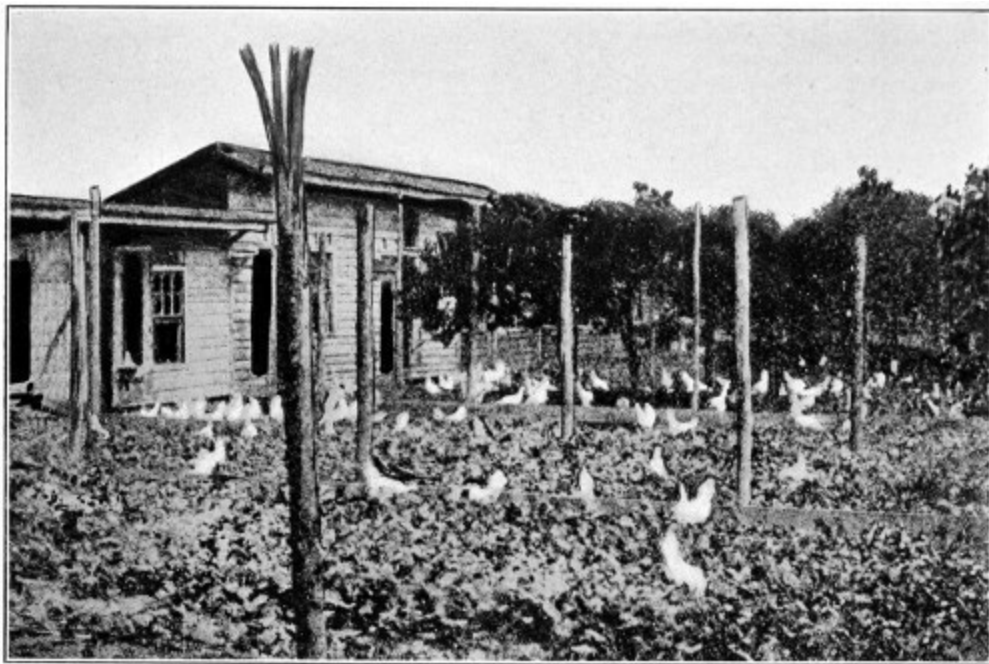
When chicks are eight weeks old, they should be separated from their mothers, and the families divided; the young pullets being relegated to colony coops, in an orchard or partly shaded meadow, where they will have extensive free range; the cockerels being placed in the semi-confinement of yards, as their ultimate fate is the frying-pan, which necessitates plump bodies, while free range would only develop frame and muscle.

Our colony houses are six feet long, three feet wide, thirty-six inches high in front, and twenty-four inches at the back. They are made of light scantling; the ends, back and roof being covered with roofing-paper, and the front, to within eight inches of the ground, with unbleached muslin, which insures perfect ventilation and prevents rain beating in upon the birds when they are on the roosts, which are fixed a foot from the bottom and nine inches from the back of the coop. Two holes are made, nine inches apart, in the middle of each end of the coop, and a heavy rope knotted through them, to form handles.

The coops having no flooring, and the whole construction being light, they are easily moved to fresh ground each week, and so kept clean with little trouble, an important item when there is a large quantity being used. Having a large orchard, we placed the coops in rows thirty feet apart, as two sides of the orchard adjoin woodland, through which a never-failing spring-stream

runs, so the birds have a splendid range.

Twenty birds are placed in each coop. The first week a portable yard, five feet long, is placed in front of each coop so that the young chicks cannot wander off and get lost, as they surely would in strange quarters. During that time a self-feeding hopper and a drinking-fountain are placed inside of the coop. When the yard is removed, the individual vessels are dispensed with, large drinking-tubs and feed-hoppers being stationed midway between every four coops, to reduce time and labour in caring for the birds.



THE POULTRY YARD

The large hoppers are nothing more than boxes, five feet long, two feet wide and six inches deep, over which is placed an A-shaped cover, made of slats, one inch apart, to prevent the birds getting into the box and scratching the grain onto the ground, where it will be wasted. For water, five-gallon kegs are used, with an automatic escape, which keeps a small pan continually full. Both feed and water are placed under a rough shelter, to protect them from sun and rain. Using such large receptacles, it is only necessary to fill them

every other day.

Feed consists of a dry mash, composed of ten pounds of wheat bran, ten pounds of ground oats, one pound of white middlings, one pound of old-process oil-meal and ten pounds of beef scraps, all well mixed. In addition to that, they receive at night a feed of wheat and cracked corn—two parts of the former to one of the latter. About half a pint is scattered in front of each coop, at about four P. M.

Grit is supplied in large quantities. Being near a stone-crusher, we buy the screenings by the cart-load and dump it in heaps on the outskirts of the orchard, where it does not show, but is quite accessible to the chicks.

On these rations, without any variation, the pullets are kept until September, when they are transferred to their winter quarters—houses twelve feet wide, ten feet high in front, sloping to eight feet at the back. Each house is divided by wire netting into twelve-foot compartments, in each of which forty birds are kept.

Winter feeding commences as soon as the birds are settled in their houses, and consists of the same mash as when on range, except that ten pounds of corn-meal is added, and, instead of the ten pounds of commercial beef scraps, sixteen pounds of freshly cracked green bone is used, and, in place of being before them all the time, it is fed once a day, just what they will eat up clean in fifteen minutes.

Until three years ago, we used to moisten the mash and feed at eight o'clock in the morning. Now we feed it dry, at 2 P. M.; at night, wheat, cracked and whole corn, scattered over cut straw, which covers the floor of the house. The proportions are three pounds of whole corn, one pound of wheat and two pounds of cracked corn. The birds are always eager for the whole corn, and, as they run about to pick it up, the cracked corn and wheat get shaken down into the litter, so they rarely get any but the whole corn at night, which fills up their crops and keeps them warm until morning, when the fine grain induces them to scratch—vigorous exercise, which sets their blood circulating and keeps them busy until 8 A. M., when the drinking-fountains are filled up with hot water.

For green food we use Swiss chard, cabbage and rape until frost destroys the supply, after which we resort to clover hay, chopped and steamed. It is fed at about 11 A. M., a large panful to each compartment, and at the same time a pint of wheat and cracked oats is scattered on the floor. Sharp grit and oyster-shells are always before them, and in very cold weather the drinking-fountains are filled up again with hot water at eleven and three o'clock.

If you have no orchard, or other partly shady place for coops, it will be necessary to erect some sort of shelters for the birds to rest under during the heat of the day. Any sort of material or shape will do, so long as protection from the sun is afforded. If free range is quite impossible (as it often is for suburban poultry-keepers), the birds must be given as large yards as possible and supplied with lots of scratching material, over which small grain must be scattered two or three times a day. Fresh green bone will be better than the beef scraps. Vegetable food is most imperative under such circumstances. Sow a large patch of Swiss chard; it is a true cut-and-come-again crop. Oats and rape are also useful crops for poultry-keepers who can give their birds free range through the summer.

A word of warning: If you are reduced to cutting grass, or use lawn-clippings, be careful to have them cut into short lengths of not more than an inch, otherwise the birds may become crop-bound.

The cockerels which go into the market-pen are fattened and sold as quickly as possible, except the few we keep for stock, and these are given large yards and fed in the same manner as pullets on range.

For fattening birds, use ground corn and oats in equal parts, add half a part of charcoal and moisten with skim-milk. Give plenty of green food and sharp grit. Feed little and often. All expedition must be used in the matter of marketing, for every day's delay after they reach the desired weight is a dead loss.

Constant culling and marketing is one of the great secrets of success. Culling must be observed just as rigidly when selecting winter stock. Discard any faulty birds. There are always some in every flock, even if the parent birds have been blue-ribbon specimens: Crooked tails or feet, ear-lobes which are red instead of white, or white instead of red, according to the variety you may

be keeping. Wyandottes, Orpingtons, Plymouth Rocks, Brahmas or Cochins should all have bright-red ear-lobes. Leghorns, Minorcas and Andalusians should be pure white. It is a bright, energetic-looking pullet which makes the best layer, and it is not profitable to keep any but the best layers, so put them into small pens and fatten. The young roosters bring good prices in the fall, and their absence from the farm reduces feed-bills and prevents crowding in the house, which is always disastrous.

Do not delay, after September first, in getting the pullets into their winter quarters, for it is most important that they become accustomed to their new surroundings and reconciled to the change from free range to semi-inactivity. It often takes five or six weeks for them to become accustomed to the new conditions, and, unless they have time to adjust themselves, they won't start laying until cold weather sets in, which means that the egg-crop is likely to be unprofitably delayed.

JULY IN THE POULTRY-YARD

IT is strange that few people except the real poultry-farmers realise that July is one of the most important months in the year. The desire to have eggs in zero weather invariably compels good attention to the hens during the winter. Baby chicks arouse interest in the spring, but as the weather gets warmer, eggs are plentiful, and the pretty, fluffy babies developed into long, lanky creatures, who seem nothing but a nuisance specially ordained to destroy the garden, so the poor things are shut up in small quarters and woefully neglected. During the fall and winter I am repeatedly asked how to make pullets and hens lay, but I can rarely suggest a remedy, because nine times out of ten it is the result of blunders made during the preceding summer.

I don't believe in sacrificing the garden to the chickens, but I do think they should be properly controlled. A roll of two-inch-mesh wire netting five feet high costs only about four dollars. At the price of eggs nowadays a few dozen will pay for it. Posts can be cut in the wood-lot on most farms, so a yard for a good-sized flock can easily be made for less than five dollars. The best plan is to run a division fence down the centre, so the birds can be confined in one half alternately, for by such means a supply of green food can be kept growing until frost. The ground should be ploughed, and seeded to rye or oats, before the wire is put up. If poultry is to be profitable, the old and young stock must be kept apart, because it is impossible to feed correctly when they are all together. Young birds need plenty of nutritious food to push them along quickly, and laying hens must be put on special rations to bring about early molting, which is the foundation of a good winter supply of eggs.

About July 5th commence to cut down the feed gradually, until at the end of two weeks forty hens are having only a pint of oats and a pint of wheat mixed, night and morning. Scatter it amongst cut straw or some litter, so they will have to scratch for every grain. The first of August commence to increase the rations, and keep it up for a week, so that by the fifteenth they are getting two quarts of mash in the morning, a quart of meat scraps and a

pint of cracked corn at noon and wheat and oats or barley at night. Give them just about all they will eat up clean in fifteen minutes. The morning mash should be composed of two parts ground feed (corn and oats), one part white middlings and one part oil-meal, mixed with scalding milk or water. The semi-starvation followed by the heavy feed forces the moulting season and allows plenty of time to feather out and get into condition before October, when their rations should be made up of the essentials for egg-production, which are clover hay, bran, wheat, corn and animal food.

You see, it takes about three months for hens to get rid of their old feathers and put on a new coat, and if the process is not forced in some way, they will not commence before August, which would make it October before they finished. Of course that would be time enough if it happened to be a warm, late fall, but if cold winter weather sets in, as it often does in November, hens would not lay before spring, as moulting leaves them in a more or less debilitated condition.

Lots of people make the mistake of selling off hens as soon as they cease laying at this season, which means that they are usually parting with the birds that would make the real winter layers. Hens that lay through the summer, and do not cease until the fall, will be idle and unprofitable in the winter. It is the general disregard of the moulting period which causes so many failures in the winter supply of eggs. The rule should be to sell off all the hens that have been laying steadily through the summer and commenced to shed feathers in September. Growing feathers is a trying ordeal, and the consequence is that when the hen begins to moult she ceases to lay, for she cannot produce eggs and feathers at the same time.

Feathers are composed largely of nitrogen and mineral matter. That is why the food at moulting time has to be so very nutritious. To feed nothing but corn at such a time is simply waste, as the hen cannot produce new feathers from such a diet. If she is on free range she would have a better chance of gathering the necessary material, but even then, if the feathering process is delayed too long, the hen becomes exhausted, and is susceptible to cold and all sorts of diseases. This is the real reason why roup and swelled head are so prevalent in the fall.

Young birds hatched out in April or thereabouts usually commence to lay in

November, because they have not been subject to the drain upon the constitution caused by moulting. But chickens that have been hatched in February or early March are very liable to moult late in the fall, just when they should be commencing to lay. For this reason it is as well to market all the first-hatched chickens, and hold over those hatched late in March or through April, to increase the laying flock.

Cull all young stock down closely. Don't keep a lot of young cockerels to eat up the profits during the winter. Even pullets which are at all backward should be marketed, for they won't develop after cold weather sets in, and it does not pay to keep them through for summer layers. Most of the failures made in the poultry business are due to people not having the courage to clean out non-productive birds. Just calculate how many quarts of feed ten growing birds will eat in seven months, and I think you will be convinced that it is unfair to expect the flock to support them and still show a profit. The trouble is that people don't realise that young stock stand still as soon as cold weather starts, remaining almost stationary until spring. Another evil of keeping undeveloped stock is that they occupy house-room and crowd the older birds.

Now is the time to wage war on vermin, while the bright days last; turn the hens out and have a good housecleaning. Use plenty of hot limewash to which kerosene and crude carbolic acid have been added. If you have two houses, crowd all the birds into one for a few days, and when the empty house has been thoroughly cleaned, commence to catch the birds at night, and powder thoroughly. Use Dalmatian or the home made powder in an ordinary tin flour-dredger, and after shaking a good supply into the feathers, use your hands to rub it well into the fluffy parts near the skin. It is well to repeat the dose about three days after. In thus doing house and birds at the same time, you may be reasonably sure of having exterminated the pests for a few months, at least. Remember to rake up all the falling leaves, to be used for scratching material. A bagful scattered on the floor of the chicken-house once or twice a week will increase the egg-yield and keep the birds healthy during enforced confinement.

Before I forget it, let me remind you not to feed new corn to the fowls. Every year, about this season, I get quantities of letters telling of good, fat hens, the

picture of health, which have been found dead. Acute indigestion, brought on by eating unseasoned corn, is the cause. So be careful. If your last year's supply has run out, it is better to buy a few bags than lose hens on whom you depend for winter eggs. Store all the cabbage or other green vegetables you can before it is too late. Look the house over and stop up all cracks and crevices. A draft from a small hole may give one bird a cold which may develop into roup and infect the whole flock, though an open-front house with only muslin screens may be healthy.

About open-front houses, I don't believe in them for laying stock. If I were going to carry a lot of young birds or hens which will not lay until April, I might adopt the open-front house as a matter of economy, but not otherwise. I can't see what is gained by them—that is, in cold latitudes. In the South they are probably all right. We all know that the great percentage of food supplied during cold weather goes to keep up bodily warmth, and that if we expect eggs in zero weather we must supply the hens with sufficient provisions to nourish the body, generate heat and allow a surplus to be converted into eggs. By providing tight, warm sleeping-quarters, we save some of the food which would be used for warmth in a cold house. Plenty of fresh air I do believe in, but everything likes to be warm during the still, dark hours.

I have often seen the argument used that wild birds, which have no houses at all, are always healthy. But how often do we hear about numbers of birds being found dead after a severe storm. What is more, wild birds only lay during the spring of the year. When man upsets Nature's laws to supply human wants, he should stop quoting Nature's ways. Our present-day hen, which lays, or is expected to lay, one hundred and eighty to two hundred eggs a year, is a very different creature from the wild hen, and she must be provided with better food, housing and care.

As of course you know, different food materials contain different qualities. Some give us the fat necessary for warmth; others, nitrogenous qualities, which form flesh; still others, minerals, such as lime, soda, etc., etc., needed for bone and muscle. All kinds of animals, birds, and even human beings, require some quantity of these ingredients, otherwise one part of the body or nervous system will be starved, while another will be overfed. With the hen it is of great importance that she have all these different ingredients well

blended in her food, as she requires them not only to sustain her in health, but also for the formation of eggs.

We will start with the foods that give the greatest quantity of lime, because it is needed for shell, and some fractional part in the white and yolk, most essential, for it is turned during incubation into bone, the very foundation of the chicken. Clover hay, linseed-meal and wheat bran contain about six pounds of lime in every hundred, and turnip-tops, carrots and all grasses have a goodly percentage. Flesh comes from nitrogenous or albumenal foods, first of which are beef, linseed-meal, middlings, bran, clover hay, wheat and skimmed milk. Fat and heat we get from carbonaceous provenders, among which corn and buckwheat lead, closely followed by oats, wheat, rye, clover hay, linseed-meal and unskimmed milk.

Mineral matter—lime, soda, potash, magnesia and sulphur—is principally formed by the action of digestion reducing the matter containing these ingredients to ash. The usual troubles assailing poultry on most farms come from the feeding of only one of these elements. Poor Biddy has all flesh and no warmth, or all fat and no flesh.

Kill a bird that has been fed on corn only, and it will be heavy with layers of internal fat, but showing a very poor depth of breast-meat. Balancing rations, trying to equalise flesh, fat (warmth) and mineral, is not a very hard proposition when the values of even a few grains and plants are realised.

Having read so far, you will now realise that clover hay, linseed-meal, bran, wheat, oats, beef scraps and unskimmed milk contain practically all the equivalents of summer foods; the addition, therefore, of corn, buckwheat or rye in cold weather is safe and simple if given only as warmth-makers. Never allow the proportion to exceed what is needed for that purpose, or fat will be made and stored, neutralising all your care. In other words, the hen fed on corn only, in order to accumulate the ten parts of flesh and twenty parts of fat needed for the egg, will be compelled to acquire fifty parts more fat than she requires.

Green bone and water now alone remain for consideration. The former is beyond doubt the best of egg foods, qualifying as it does in nearly all the needed elements. Many farmers scoff at the idea of having to pay for a mill to

cut up bone for chickens, yet the same men will not grudge a hay-cutter for the horse and cow. Green bone means fresh bone from the butcher, which can be bought for about two cents a pound. The mill to grind it ranges from eight to fifteen dollars.

Green bone contains the natural meat, juices, blood, gristle, oil and mineral matter in soluble condition, which renders it easy of digestion, especially for birds—almost all the components for eggs (white, yolk and shell), in the most concentrated form possible. So, if eggs are to become profitable, the bone-mill must be kept going. When it is impossible to obtain the green or fresh bone, the ground bone sold especially for poultry can be used, though it is not half so satisfactory, because the drying process it has to submit to before grinding leaves little but the phosphate of lime and earthy matter, which clover and bran furnish in better form. At least half the egg is composed of water, surely a sufficient reason for impressing the importance of a generous supply accessible at all times, in clean dishes, of a proper temperature, cool in summer and the chill off in winter.



A FLOCK OF TURKEYS

THERE are six varieties of turkeys: Bronze, White Holland, Bourbon Reds, black, buff, slate and Narragansett. But the three first are the ones most worth raising specially for market, as they are large birds and the most popular varieties. So it is easy to get good stock, to start with, which is of paramount importance.

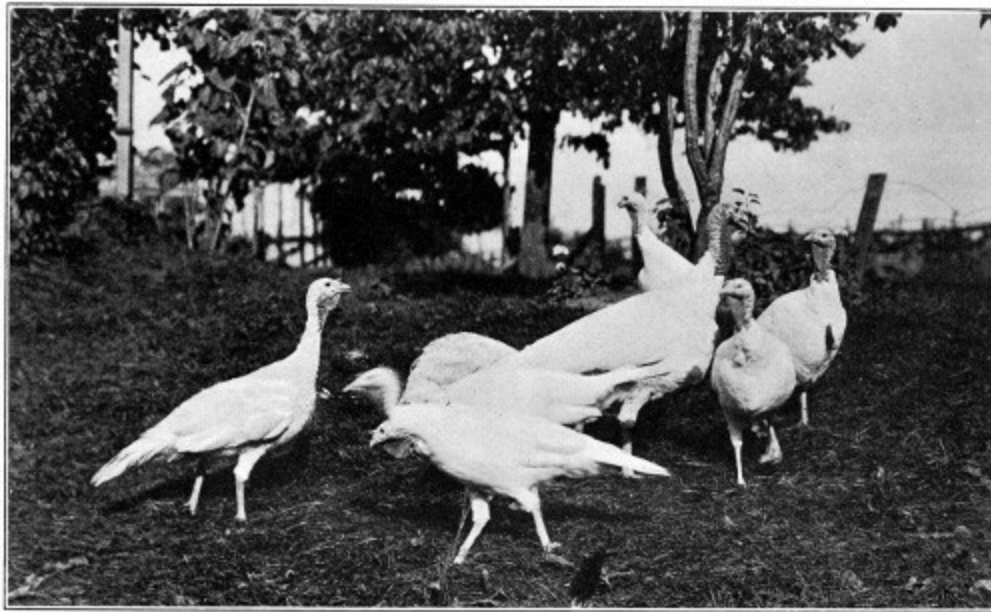
A trio of any one of the three varieties will cost from fifteen to twenty dollars, and if only twenty birds are reared the first year for market, they will bring at least sixty dollars. That is placing the average weight at twelve pounds and price twenty-five cents a pound. This is, however, absurd, when you consider that young toms weigh twenty pounds and pullets fifteen, feed could not possibly cost more than ten dollars, which would leave thirty dollars' profit the first year.

A successful turkey-raiser told me he had kept his birds in yards for twelve years, so I felt safe in adopting the plan. I suppose I ought to have said inclosures, for they covered about half an acre each. The land was shaly, with a rocky background, but there were plenty of clumps of scrub brush and ferns, from the rocks to the top of the two acres they used. The ground sloped to the south; a spot of no earthly good for any other purpose, but perfectly ideal for turkeys.

However, as our farm had no such place, I utilised a strip of poor brush land which had good natural drainage and made three inclosures, each one hundred feet wide and three hundred feet long. An open-front shed twelve feet long and ten feet wide was built in each. They were just rough shelters built out of slabs and the only fittings were perches made out of sassafras poles, none of them less than nine inches in circumference. This is one of the important items in fixing a place for turkeys. Being heavy, large-footed birds, they are uncomfortable and positively suffer if condemned to balance themselves on slight perches such as chickens use.

It took four loads of slabs to make the three sheds, and they cost seventy-five cents a load at the sawmill. Wire netting cost forty-eight dollars, perches and posts were cut in our own woods, and the home help did the work.

I got ten female birds from the Massachusetts farm for fifty dollars and two toms from Long Island for twenty dollars. We sent for the birds early in December so that they should have time to get thoroughly at home in their new quarters before the laying season. Before they arrived, the front of the sheds was covered with wire netting, so that we could keep them shut up at first, but after two or three weeks it was removed and they were allowed the range of the yards. The wire around the inclosure was only four feet high and one wing of each bird was cut to prevent them flying over it.



A FLOCK OF TURKEYS

Early in March a half-barrel was secreted among the brush, in both the occupied yards, so that the hens would be accustomed to their appearance and, we hoped, consider safe hiding-places for their eggs. The plan answered splendidly. About the middle of the month we commenced to keep a lookout for eggs in the half-barrel and for stolen nests. When an egg was found, it was purloined, and a china one put in its place; ditto when the second egg

was taken, but after that, no more china eggs were dropped, for two always seemed to satisfy Mrs. Turkey.

Unlike common hens, turkeys are not attracted to a nest by an egg. In fact, they retain so much of the wild bird that they will not adopt a nest that has been used by any other bird, so never distribute nest-eggs as decoys, but only as substitutes for those abstracted.

The matter of feeding the old birds is of great importance and is the rock most farmers founder on. Too often the birds are left to forage for themselves or, at the best, are given uncertain quantities of corn, which means that they are miserably thin and dilapidated or outrageously fat. In either case they lack the components which the egg for hatching should possess. Result, weak youngsters which are doomed to die, no matter how much care is lavished on them.

I once heard an old poultryman say that the care of the chick must commence when its mother is hatched. This may seem ambiguous to the amateur, but it is literally a fact and one which my Massachusetts friend had made me understand was most potent when applied to turkeys. So our turkeys are fed with special reference to supplying the ingredients to be converted into bone and vigour in the birds to be. Breakfast: Chopped clover-hay, steamed overnight, two quarts; corn and oats ground together, one quart; beef-scrap, half a pint. At noon, one quart of oats, Kafir-corn or barley scattered broadcast in the yards. At night, whole corn when the weather is very cold, but as it moderates in the spring the amount is decreased and wheat is used in its place.

These are their regular rations from December to April, when the beef-scrap and corn are entirely omitted. Water and grit is before them all the time. We buy screenings from the stone-crusher and, as it is cheap, dump a lot into each yard twice a year.

I generally steal the first ten eggs from each nest and set them under the hens. However many a turkey lays after that, she is allowed to keep and hatch them. It takes them twenty-nine days to hatch, and large, motherly old hens should be chosen from the chicken-house to do the incubating. It is not safe to put more than five such eggs under an ordinary hen.

When the hatch is over, put the hen into a brood-coop and, in front of it, put a box about nine inches deep and large enough to form a yard for the babies to exercise in. It is, of course, necessary to remove part or the whole of the end of the box which joins the front of the coop, so that the little ones can run in and out. Cover the bottom of the box with coarse sand and put a small drinking-fountain in one corner. Thus the babies will have a safe place to play in the first few days of infancy, when they must be kept dry. After that the box can be removed and the coop moved a few feet every day for the sake of cleanliness.

When Mrs. Turkey's brood hatches, we treat them in the same way, only the brood-coop is specially made and is much larger than the ordinary hen-coop. The first feed the babies have is stale home-made bread soaked in scalded milk, which is squeezed out of it before it is fed. Like little chicks, they must have nothing for twenty-four hours, then little and often must be the rule.

Never leave food in front of little turkeys, for they are very apt to overeat. After two weeks they need only be fed four times a day; after the fourth week three times a day. After the first two days add a little hard-boiled egg which has been chopped fine, without removing the shell, and a few days later, pin-head oatmeal and ground charcoal; about a teaspoonful of the latter to a cupful of bread and oatmeal.

By the end of two weeks gradually reduce the bread and increase the oatmeal, which should be cooked about half an hour and allowed to dry out, so it is easily crumbled when cool.

After the fourth week, ordinary ground oats, just moistened with scalding milk, may be used. Half-boiled liver, chopped fine, is the best animal food to give. When that is not practicable, use the best brand of commercial ground beef, one teaspoonful to a quart of meal, because it is very strong and liable to produce diarrhea, a disease which attacks young turkeys almost sooner than any other young bird. Watch carefully and at the first evidence of any looseness of the bowels give boiled rice to eat and rice-water or cold tea to drink.

Watch newly-hatched babies for a few days at feed-time, for there is often one or more that needs to be taught how to eat. This is especially so when

they are with common hens. But a little patience in crumbling close in front of them and coaxing them to pick it up will overcome the difficulty. After they are eight weeks old we take them from the hens and put them into the third yard, which is kept exclusively for young stock.

At night they are driven into the shed, the front of which is always kept covered with wire netting, so that they can be closed in until they get accustomed to roosting. Of course, the perches in this shed are put nearer the ground and are much smaller than those intended for grown birds. About October 1st they are allowed the free range of the farm and are fed on corn at night and given all the milk they will drink, to get them into good killing condition before Thanksgiving, when they are all sold off, except perhaps a few extra good ones, which we may keep for stock. The old birds are also allowed free range from October until February, but they are fed in the yards at night and are shut in so that they don't form any bad wandering habits.

In buying stock, be generous and get the very best, from some well-known turkey-raiser. Ordinary farm stock is so apt to be inbred that, although the birds may look all right, it is not safe to buy them for breeding purposes, as a want of stamina will surely show in the youngsters.

For the same reason it is best to get the hen-birds from one place and the toms from another. If you are going to keep Bourbon Reds or bronze, it is advisable to buy half-wild toms. These are the result of crossing wild gobblers with domestic hens, which is done by large breeders to infuse new blood and keep up the vigour of their stock. Personally, I like the White Holland turkey best, as they are domesticated and bear confinement well.

If you are only going to keep a few birds, say a trio or five hens and a gobbler, large yards are not necessary, but a shed over which netting can be put, should always be set apart for their use, so that they can be fed and shut up at night. Never, under any circumstances, keep any of the pullets you raise, unless you change your gobbler. Don't let two gobblers run with the flock at the same time. If you want to increase your number of birds, you must either put up inclosures or alternate the gobblers every two days.



DUCKS AND GEESE

DUCKS are so profitable that I cannot understand why so few keep them, unless it is the mistaken idea that they must have a stream or pond in which to swim. It is true that the old-fashioned puddle duck did seem a miserable creature out of water, but the improved strains are almost as much land birds as chickens are. My stock started with two ducks and a drake which had cost me seven dollars. The first season I raised fifty-eight, sold forty-six, and kept twelve to stock. They were ready for market when eleven weeks old, and the lowest price was eighteen cents a pound.

Ducks must have dry, comfortable quarters, but a splendid house for twenty ducks can be made on any farm for a dollar, or even less. One man who keeps large flocks makes duck houses with hurdles of green boughs for walls and roof, the outside padded with leaves, straw, corn stalks or cedar boughs. Each house is six feet by four feet and two and one half feet high, and accommodates seven ducks and a drake.

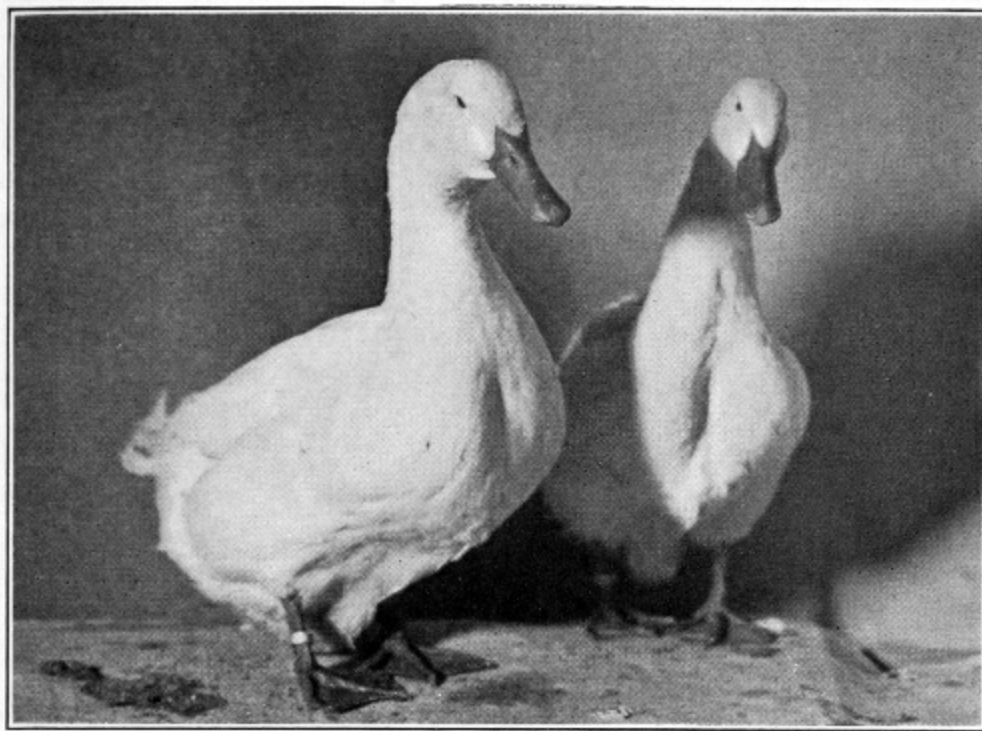
Dry-goods boxes, costing ten cents at any village store, can be made comfortable for a small flock. The main point is to keep them dry, which depends almost more on the care given to the covering of the floor than the wall of the house. Good, dry bedding, changed at least twice a week, will keep them warm and happy through the coldest weather.

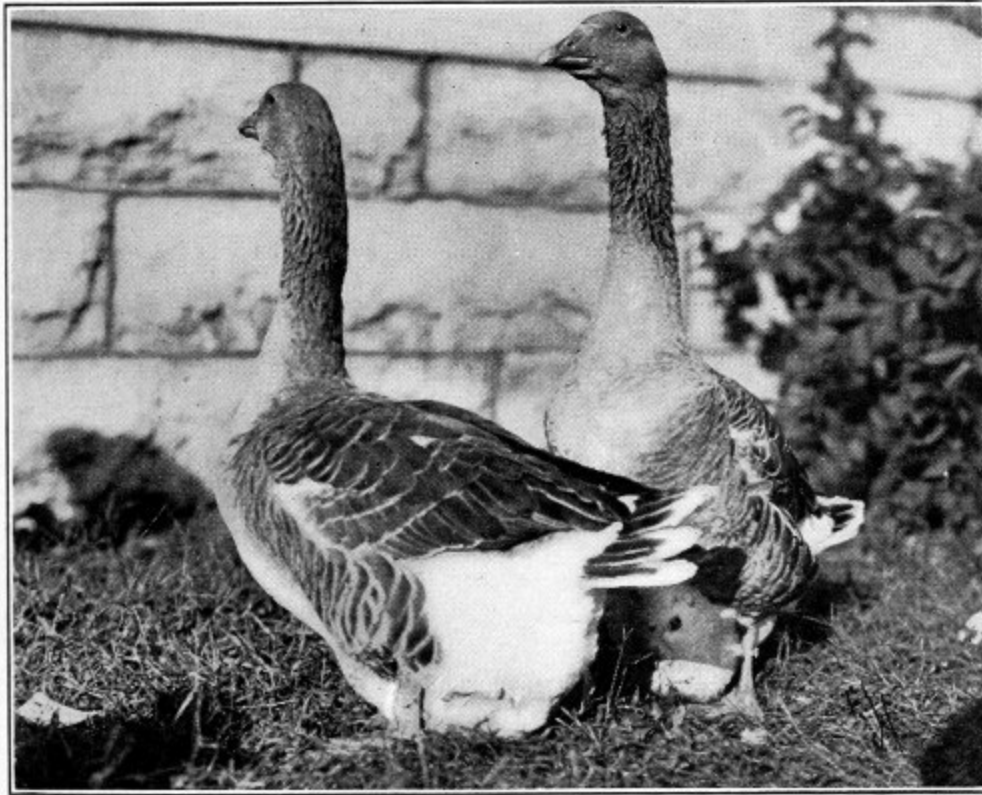
Ducks' eggs bring good prices during February and March. You can easily get them to laying by then, as it depends principally on feeding. Ducks, like geese or cattle, must have a good percentage of bulk material and green stuff, as well as concentrated grain feed. Clover hay, or even mixed hay, chopped and steamed, about half a pailful with a pint of coarsely ground corn-meal and the same of bran mixed through it, is about right. If hay is short, chop corn stalks small, and steam. Chopped vegetables of all kinds are good, but pumpkins, potatoes and beets are fattening; so, unless the weather is very cold, omit the corn when they are fed, using more bran or screenings in its

place.

In the summer have the children gather plantain, dock, groundsel or any other non-poisonous weeds. Have sugar barrels ready, and pack in the weeds while fresh. Get a heavy, solid board rounded off to fit inside the barrel, put on top of the green stuff, and weight down with heavy stones. Pad up tight with paper, sawdust, straw or any loose material, and replace the head of the barrel. When snow covers the ground, such food will increase the eggs from both ducks and chickens.

Oak leaves, acorns and pig hickories do not take long to gather in the fall, and will tone up the appetites of pigs, chickens and ducks late in January, when they are getting tired of grain feed.





DUCKS AND GEESE

Imperial Pekin, Rouen and Indian Runners have been the best market breeds of ducks for some years past, and are still splendid fellows, both for eggs and table, and their new rivals, the Buff Orpington ducks, quite equal them as utility birds.

Ducks make such bad mothers that it is better to hatch their eggs under hens or in incubators. The first few eggs a duck lays each season are seldom fertile. Eleven are a full sitting, and it requires twenty-eight days for their hatching. Examine the nest every two or three days after setting the hen, for bad eggs. A weak germ that dies causes the egg to decompose, and the odour once smelled can never be forgotten.

Examine the nest when the hen comes off to feed, and take away the eggs that are dark and mottled. If you fancy an egg looks wrong, pick it up and smell it; that and its sticky touch assure you, for the egg is porous. If you

have been using an incubator to hatch chicks you can test with a proper tester, and this must be done all the time from the fourth to the fifteenth day.

When the hatch is over at the end of the twenty-eighth day, have ready a box about a foot deep and three feet long, the top out and one end taken off. Place the open end against the coop door, so making a little run, with a board floor covered with an inch of dry sand or earth. Baby ducks need even more protection from damp than chicks; therefore, if the weather is bad, keep the coop and run under cover, and if fine, the shade of a tree is necessary, for the little fellows can't stand the full sun. After a week the hen can be removed, but keep them within bounds on short grass, not letting them out until the dew is gone.

For twenty-four hours feed nothing. First week: Half a pint of rolled oats, some cracker or stale bread crumbs, two hard-boiled eggs chopped fine, half a cupful of coarse sand just moistened with milk. Feed four times a day just what they will eat in ten minutes.

Second and third weeks: Half a pound of ground oats, the same of wheat bran, one-fourth of a pint of corn-meal, the same of coarse sand, two tablespoonfuls of beef meal, a pint of finely cut green clover, rye or cabbage moistened with scalded milk. They must be fed four times a day.

Fourth to sixth week: Boil a quart of hulled oats for an hour, add a pint of corn-meal, wheat bran, half a pint of fine grit, the same of beef scraps and a quart of clover or any kind of green food. Feed four times a day.

Sixth to tenth week: One quart of corn-meal, a pint of wheat bran, a pint of boiled oats, a pint of beef scraps, half a pint of grit, a tablespoonful of charcoal and a pint of clover. Feed three times a day.

They should be ready to kill the eleventh week.

Do not let the ducks, young or old, get frightened if you can possibly help it. They are nervous things. No matter what you feed, if they are frightened or made to run daily, they will not fatten. If you go about them gently they are the easiest things to drive any distance, for where one goes, all follow; hurry them and they will scatter, and it is good-bye to them for hours.

The feed for those to be kept for stock is the same up to three weeks old, but from that on one quart of ground feed, one quart of bran, half a pint of grit and half a pint of beef scraps. Mix moist with milk, water, sour milk or buttermilk, and feed night and morning. If on a free range this is all they want. If not, you must add clover or vegetables, and feed three times a day. Remember always to have fresh, clean water before them.

When ducks are ten or eleven weeks old they should be in condition for market. Early green ducks should weigh not more than four and one-half pounds, while later ducks cannot be too heavy. As a rule early ducks mature very unevenly, making it necessary to sort them over often.

Ducks are fit to dress for only a short time. They “go back,” as it is termed, for they shed and grow a new lot of feathers, which takes all the fat and all your profit. Hence the importance of turning them into money as soon as possible.

In dressing it is most desirable to dry pick. Although some still scald, dry-picked stock sells better than scalded, especially when the market is dull, for it can be frozen, while scalded stock cannot. For dry picking have a box for the feathers. It may be of any size you wish on the ground, and should be of such depth that the top edge is one or two inches lower than your knee when in a sitting position. To use for cooling the ducks, saw a coal-oil barrel in two; use one-half for cooling, the other half for clear water to put them in after washing.

To kill, catch the feet in the left hand, and the neck near the breast with the right hand, then with a swinging motion (the same as in using an axe), strike the back of the head against a post with sufficient force to start the blood from the ears. Now with a quick motion place the body under your left arm, catching the back of the head and the top of the bill in the left hand. Using a knife with a five-inch blade, make a cut crosswise at the base of the brain, then turn the edge to the roof of the mouth, and slash outward, being careful not to split the bill. Let the blood run for two seconds.

Sit down. Place your knees against the neck just tight enough to keep it in place. If too much pressure is put on, it will stop the flow of blood and give the flesh a red appearance. Hold the feet and wings in the left hand.

Commence picking at the vent, then the breast and neck. The feathers are left on half the neck, and on the wings from the first joint out. Pick clean as you go, for once the duck gets cold, it will be hard to pick. Experts use a shoemaker's knife ground thin, and strop it the same as a razor, to shave the pin and small feathers off.

After picking, put them into ice water or cold spring water until the animal heat is gone; then wash the feet, and wash all clots of blood from the mouth and throat; then put into another vessel of water, which takes all the stains off and gives a nice clean appearance. After they are clean you can put them into a barrel or box with crushed ice, and if left for twelve to twenty-four hours in this condition they can be shipped a long distance with but little ice. To make dressed ducks show up good it is necessary to take them out of clean water at the finish. The second vessel should have clean water put in as soon as it gets cloudy.

When packing for shipment, use flour or sugar barrels. Pack with back down, putting the head under the wing. Pack close, and leave a space on top for ice. Raise the top hoop, place burlap on top, drive the hoop on again, with the burlap under, and nail firmly. Before using, the barrel should be thoroughly washed. Bore two three-fourths-inch holes in the bottom, to drain.

A goose will lay from ten to twenty eggs and then want to sit; but if you coop her in sight of her companions, four or five days will suffice to break her up. If she lays a third clutch of eggs, let her keep them and sit.

When the weather is mild, set five eggs under a hen; or, if she is very large, seven might be risked. It takes from twenty-eight to thirty days for goose eggs to hatch. As the skin is very tough, it is well to sprinkle a little water around the nest, and even on the eggs themselves, during the last two weeks, especially if the weather is dry and hens are doing the incubating.

The youngsters need nothing for the first thirty-six hours. Then feed scalded corn-meal—the coarsest kind—and wheat bran, chopped green clover or young green oats cut fine, tops of green onions, lettuce leaves or any tender young greens.

If the weather is fine, put the coop containing Biddy and her family out on

the grass, making a small yard in front for the first few days, to prevent their wandering too far away. Move the coop and yard to a new place as they eat the grass. Like young ducks, their drinking water must be in a vessel that permits them to put the whole beak into the water, or they are apt to get the air passages clogged up with soft food, causing the gosling to smother; but on no account must they be permitted to get their bodies into the water, as they chill and cramp so easily.

It is much better to buy two- or three-year-old birds from a reliable dealer for stock than obtain eggs for setting and wait for them to develop. After the breeding season is over, geese and goslings need little grain if on grass land. Late in the fall geese do well if turned into the corn stubble or the orchard, where they will clean up all the windfalls—which does much to stamp out grubs and insects.



PIGEONS AND SQUABS

WHEN pigeons are kept for squab-raising it is one of the most profitable ventures in which suburbanites or real country folks can embark. The young are ready for market when four weeks old; the average wholesale price is three dollars a dozen. Private customers will pay forty cents a pair all through the winter months, and a good pair of mature birds will raise two squabs every four weeks for nine months in the year, which means that each old pair of birds should provide one and one-half dozen squabs, which will market for four dollars and fifty cents. The cost of keep is supposed to be fifty cents a year, but ever allowing one dollar a year, there should be three dollars and fifty cents clear profit.

These estimates are made on good homer pigeons, well housed and cared for, not common nondescript birds, leading a half-wild existence, with only old-fashioned shelter behind a row of holes high up in the barn, where the nests are exposed to every storm; besides which, the young of mongrel pigeons only weigh five or six ounces when four weeks old, and are so scrawny and unappetising that they are difficult to market at any price, whilst homers at the same age weigh from twelve to twenty ounces, and are white-skinned and plump. The mature homers will cost about two dollars a pair from any of the recognised lofts, but it is no use buying elsewhere, for unless birds are mated pairs, you may have another season wasted. Pigeons are faithful creatures and remain in pairs for years, and if an accident happens to one of them will frequently refuse to mate a second time the same season. Young birds which are only paired at the time of sale are likely to object to the mates chosen for them, and proceed to exercise personal choice when liberated amid a flock of strange birds. So be wise and buy only from reliable experienced breeders.

The most convenient house for squab-raising is built like a chicken-coop, about twelve feet wide, eight feet high in front, sloping to six feet at the back, and any length, according to the number of birds kept. Have plenty of windows in front of the house, and openings six inches square, three feet

apart, all along the back of the house about a foot from the roof. Run a nine-inch board the entire length of the house as a platform for the birds to alight on as they go in and out, and it is just as well to have a similar board just under the holes on the inside of the house. Put up three or four perches near the front windows, so that the birds can fly from side to side of the house on wet days for exercise.

The number of birds which can be kept in each house can be easiest estimated by the nests. Each pair of brooders must be provided with nest-boxes divided into two compartments twelve inches square. They can be arranged in tiers all along the side, back and front walls, and from floor to ceiling. Put the first tier about eighteen inches above the floor, as the birds don't seem to like the lower nests. Fasten small perches about a foot long to the partition on each box, for the convenience of the birds as they fly back and forth, and when feeding their young.

Before the house is occupied, it should be thoroughly whitewashed, the floor covered with sand or ground plaster, and earthenware dishes known as "nappies," which cost one dollar a dozen, must be put in, one into each compartment. Suspend a bundle of cut hay in one corner of the house, as some birds like to make their own nests, though others seem to think that a handful of tobacco-stems, which it is well to place in each nappy as a check to vermin, is quite nest enough.

Drinking-fountains and feeding-boxes into which the birds can only get their beaks are imperative for pigeons, for they are most particular and will not take defiled food or drink unless positively starved into it. Yet if they have open feed and water boxes, they will scatter the contents all over the floor. There is a galvanised-iron feeding-box costing one dollar on the market which has seven openings, so that many birds can feed at the same time. Water-fountains of the same material are virtually indestructible, and cost only fifty cents.

The yard and fly must of course be entirely closed for pigeons, and should be four feet higher than the front of the house, so that the birds can use the roof for a sun-parlour. We use four-by-four joists, cut into twelve-foot lengths, for the front of the house, as they can be nailed to the house and need not be sunk into the ground, as those at the side and far end must be. The joists for the

sides and end are cut into thirteen-and-one-half-foot lengths, which allows a foot and a half to go into the ground. These measurements allow the use of four-foot netting without any waste. For a house twelve feet long, I think the yard should be at least fifty feet. Erect several perches at the far end of the yard, a platform about two feet wide and four feet long on legs three feet high in the centre of the yard for the bath-tubs to stand on. Pigeons must have a bath, for cleanliness is a necessity; a pan about two feet square and four inches deep is the best size, and they can be bought in galvanised iron for one dollar each.

Red-wheat, Kafir-corn, cracked corn, Canadian field-peas, German millet and hemp-seed are all appropriate for pigeons. They should be alternated, or one or two mixed together. Of course, sometimes one grain is cheaper than another, or easier to get in certain districts, but don't use any one grain exclusively. Pigeons must have variety.

We follow the rations recommended by W. E. Rice, a very experienced pigeon-raiser. Morning: Equal parts of cracked corn, Kafir-corn and wheat. Evening: Cracked corn and Canadian peas. These regular meals are put into the feed-boxes in quantity sufficient to insure the birds having a constant supply. Treats which we feed at odd times, such as millet, hemp and rice, are thrown on the ground, for, as they are only fed in comparatively small quantities, they are eaten up at once, and so there is no danger of their being soiled. Remember always to buy red, not white, wheat, for the latter is very apt to cause diarrhea.

Once a week we give them a meal of stale bread which has been steeped in skim-milk and squeezed almost dry again, for we have lots of skim-milk, and the bread we get from a baker in the town for twenty-five cents a barrel. Freight costs another twenty-five cents, but even at fifty cents a barrel we find it an economical feed when there are a lot of squabs to be fattened for the market.

The parent birds take all the trouble and responsibility of feeding and raising the young right up to the time they are ready for market. The hen-bird lays two eggs, with one day intervening, which take eighteen days to incubate. After the eggs are hatched, both birds devote their entire energies to feeding the youngsters for about two weeks, for both have the power to secrete the

predigested substance often called pigeon's milk, on which nestlings are exclusively fed for the first few days. At the end of two weeks the hen has usually laid two more eggs in the second nest, so that by the time the squabs in the first nest are ready for market, the second eggs are ready to hatch. It is this double family which necessitates two nests for each pair of birds.

Cleanliness is even more imperative in the pigeon-house than in the hen-house. Never neglect to scald out the earthenware nest, and whitewash the compartment it stands in, every time squabs are removed for market, for it is only by such rigid system that the place can be kept in a sanitary condition. Pigeons must have shell, salt and charcoal to be healthy, so there should be a self-feeder with three compartments in each house. When ordering, specify that the oyster-shell is for pigeons, as it is to be broken up smaller than for the hens. The rock salt and charcoal should be ground to about the size of rice. During the heavy breeding season we crush most of the grain, and always peas, for when the parent birds are rushed for time between their two nests they are very liable to pick up whole grain and feed to the young birds before they are able to digest it. Until we discovered this carelessness, we often had a dead squab in the nest. The feed-boxes can be kept filled up, as pigeons never overeat, and must have access to food at all times when they have young ones to feed.

If you start with a few pairs of birds, the best way to increase the number is to sell the squabs, and use the money to buy mature birds, for it takes pigeons six months to reach maturity, and it is necessary to have two extra houses in which to keep the growing birds, as they should not be allowed to remain in the regular brood-pen. If, however, you have specially-mated birds and desire to raise their progeny, you must watch the nests, and as soon as the young ones get out on the floor (the old ones generally push them out when the eggs in the second nest hatch), they can fend for themselves, and should be removed to a nursery-house, where all feed must be cracked to the size of rice for several weeks. When one desires to build up size and good points, it is necessary to have two nursery-houses, and so be in a position to select the best birds from different parentage to mate.

To illustrate: The nestlings from one side of the house should go into Nursery No. 1, nestlings from the other side into Nursery No. 2. Our nurseries are

only seven by ten feet, so we never have more than twenty birds in each, and they can be taken within a few days of each other, in this way making very little difference in age when it comes to mating-time. When the younger ones in the nurseries are between six and seven months old, we take a bird from each and put them into a mating-cage, which is really a coop, four feet long, two and one-half feet deep and two feet high, which is fastened up in a corner of the feed-house. The coop is divided into two compartments by a wire-netting door. A bird is put into each compartment. If they are male and female, they will commence within a week or two to coo and talk to each other through the wire, at which time the compartment is fastened up to the top of the cage, and they are allowed to have the run of the coop for three or four days, after which they are put into a regular breeding-house, where they will soon take possession of the nest. If, however, the birds chosen simply ignore each other after they are put into the mating-cage, one of them is removed to another cage, and two more birds are taken from the nursery-house and put into the two compartments. In this way we go through the nests until we have them all paired.



POULTRY AILMENTS

ONLY in rare instances does poultry require doctoring, yet it is well to be prepared with sufficient knowledge to recognise the symptoms of approaching trouble. A few small coops should be kept in some dry, sheltered outhouse, to be used as quarantine quarters. Empty dry-goods boxes turned on their sides, with half the front boarded across and a door of wire netting to close the other half, make good coops for individual patients. They should be covered all around, sides and top and bottom, with roofing-paper, to insure freedom from draft. The boxes may be any size, but I like them about eighteen inches wide and high, and about two and a half feet long. To avoid dampness, and for convenience in attending to the birds, it is well to elevate them on legs or stand them on a shelf or bench. Before using, or whenever they are vacated, they should be disinfected and the inside thoroughly painted with whitewash. The enamelled cups without handles can be attached to the side of the coop by wire loops.

The most dreaded visitor on a poultry-farm is roup, for it not only affects the bird during the period of immediate illness, but it leaves behind it all sorts of constitutional weaknesses to the bird's progeny. Every poultry-keeper should cultivate the habit of scrutinising his or her flock at feed-times. A suspicious-looking bird should be caught and removed to quarantine quarters immediately. The symptoms of cold, influenza, canker, diphtheria and roup are in the earlier stages almost identical—watery eyes, sneezing, discharge from the nostrils or the nostrils being stuffed up (the nostrils are the two small holes at the base of the bill). When the bird is noticed to have any one of these symptoms, open the bill and look down the throat. Should there be no signs of trouble, you may be sure that there is nothing but an ordinary cold to fight, which a few days in hospital will cure.

Give light and easily digested food, such as stale bread soaked in scalded milk and squeezed almost dry or corn-meal which has been well steamed. Put ten drops of spirits of camphor on a lump of sugar, then dissolve the sugar in

a half-pint of water and use in the drinking-cup. If, however, examination reveals yellow spots on the mouth or in the throat, or a thick slimy discharge from the eyes and nostrils, it is a serious case of catarrh or roup, which may, if neglected, develop into malignant roup. Throughout the entire range of cold and roup diseases there is no special odour until malignant roup is positively developed. Then there is a most offensive and unmistakable odour.

Treat all diseases which overstep a common cold as roup, and you will err on the side of safety. In the last and most malignant stages of roup, the face and eyes or head are very likely to be severely swollen, and if things have progressed to such a condition, before the bird has been removed from the flock, it is well to take the precaution of disinfecting the drinking and feeding dishes and generally clean up the poultry-house, and add a disinfectant to the drinking-water for a few days. Permanganate of potassium is what I generally use, because it is cheap and most effective as a germ-killer. Dissolve one teaspoonful in a quart of warm water, and you will have such a strong solution that for all ordinary uses can be diluted again at the rate of one teaspoonful to five of water.

Treatment for roup: First wash off any discharge which may have accumulated around the eyes and bill with warm water and permanganate; then fill an atomiser with diluted permanganate solution and thoroughly spray the throat and nostrils. Repeat night and morning, as long as there seems any necessity. Keep the light diet as recommended for common cold.

Indigestion and intermediate stages up to acute gastritis and liver complaint, all spring from the same causes, and will succumb to the same remedies, so we will consider them connectedly. They are caused by indiscreet or excessive feeding; mash which has been allowed to become sour; an excess of bread, potatoes or fat in table-scraps fed to the birds; lack of corn, vegetables or sharp grit; condition powders, egg-foods, and such condiments, if given frequently, will affect the digestive organs and bring on indigestion. At first the sufferer looks mopey and stupid; the comb is pale. At this stage a few days in hospital and a dose of magnesia and reformation in diet will work a cure. Put about a third of a teaspoonful of sulphate of magnesia in a cup of drinking-water. Feed a mash composed of three parts finely-cut clover-hay, which has been thoroughly steamed, and one part each of coarsely-ground

corn and oats. If you haven't clover-hay, use wheat-bran instead; chopped apple, lettuce or any greens should be the mid-day meal. Put a small pan of sharp grit into the coop. Advance symptoms are watery, yellowish droppings and thirst, and the comb becoming fiery red, which may gradually darken to crimson as the bird's condition becomes worse. Administer a teaspoonful of castor-oil; feed sparingly on mash, which at this stage should consist of boiled rice, scalded bread and milk or cottage-cheese. If the dysentery is very severe, fill up a drinking-vessel with the water in which the rice was boiled. After eight hours of such diet, add twenty-five drops of tincture of nux vomica to half a pint of rice-water. Continue with light, nourishing food for about a week.

In the fall fowls are frequently given free range, before the corn and other crops are harvested, and with the result that they gorge themselves with new corn, which is very liable to heat and swell. In the summer people are very likely to cut grass and throw it in to yarded hens, who will eat it greedily, but it invariably causes trouble, being in long lengths. Lawn-clippings, which are not over an inch in length, are quite safe and, of course, supply the required green food which they specially crave in hot weather. When the bird is seen to have an unusually large crop and shows signs of distress, catch it and hold by the feet, head downward, then gently work the crop so as to push a little of the contents into the throat and out through the beak. Even if only a few grains can be ejected in this way, it will help the strained condition of the crop and ease the bird's sufferings. Administer a dose of castor or sweet oil.

Occasionally an obstinate case can't be helped by simple means, and then surgery has to be resorted to. Tie the feet together and the wings close to the body with a broad strip of muslin, place the bird on its side on the table, calling in assistance to hold it still, and with a sharp pocket-knife make a small slit, first in the outer skin, pulling one side slightly outward, then making an insertion in the crop itself. Carefully remove the contents. You need not be at all nervous about the operation, which is quite painless. After the crop is emptied, take a moderately fine needle threaded with a fine sewing-silk. Take two or three stitches in the crop and cut off the thread, pull the edges of the outer skin together and fasten with two or three stitches. Of course, under no circumstances must the crop and the outer skin be fastened together in stitching. Keep the bird on very meagre rations for a week or ten

days.

The most common ailment of infant chickenhood is bowel trouble, and one should be on the watch for the the first signs, all through the hatching season, as a few hours means much to frail baby life. A chill, dampness, improper food or dirty drinking-water are the usual causes. Should any laxity be noticed in the droppings, remove the drinking-water and substitute either milk which has been scalded and allowed to cool or rice-water, according to the symptoms. Feed boiled rice at least once a day. If the chicks are in a brooder, set the temperature a little higher than under ordinary circumstances. If they are with a hen, keep her confined to the brood-coop, to insure the chicks being able to nestle to her.

Gapes is the second scourge of chick-life. Gapes is not truly a disease, but the effect of a parasite worm, which is supposed only to materialise on ground in which poultry-droppings have been deposited for several seasons. A gapeworm is only about five sixteenths of an inch in length and no thicker than a fine thread. Once introduced into the bird's throat it fastens there and sucks the blood of its victim, and, of course, a little chick has not the strength to eject it, no matter how much it may cough or gape. They multiply very quickly. Some of the remedies are as follows: Dip the end of a small wing feather in turpentine, push it down the bird's throat, turn two or three times quickly and pull out. The worm may come with it. Another is to mix salt and water or steep tobacco in water for ten minutes; pour a tablespoonful down the bird's throat, keeping the head up, and the two holes at the base of the bill covered with your thumb and forefinger whilst you count five. Release and suddenly turn the bird upside down, holding by the feet. It will gasp, splutter and usually eject the worm. To exterminate the pests, have the ground, on which the birds have been cooped and yarded, sprinkled with quicklime (keeping the birds safely cooped, so that they cannot get into or eat the lime). Let it lie overnight and then plough under. If such treatment is impossible, remove all the young stock to some other part of the farm. Mature birds have the strength to eject the worms.

THE VEGETABLE GARDEN

IT is advisable to plan the garden on paper and make out seed lists early in the spring, to save time later. Every family will, of course, have specially preferred vegetables to take precedence over others, so individual taste alone can determine the allotted space for each variety. Our selection and plan was made with due regard for table pickles and preserves, all of which were bountifully supplied. Therefore, if your discrimination on such subjects is too undeveloped as yet to be trusted, accept our experience this year, and then you will know how to reconstruct it for your personal needs. When planning out on paper, the second crop should be considered as well as the spring sowings.

One of the advantages of sending for seeds early is that you are sure to get the varieties selected, whereas later in the season “the best” is frequently sold out.

When choosing a site, remember that a slight slope to the south or southeast is desirable. Size must depend very much on whether you intend having a separate berry patch or not. A hundred feet by seventy-five feet will supply an average small family with vegetables for the table, excepting winter potatoes, which should be a field crop.

Protection from the northeast storms should be provided. Cedar or privet is the ideal hedge for such purposes, but it takes money and time; so, while it is developing, resort to the serviceable hurdle fence made of brush.

If the weather is fine, the last two weeks of March should see the patch of ground intended for the vegetable garden ploughed and harrowed.

Have well-rotted stable manure scattered over the surface before ploughing, which should be deep at first. After two or three days’ airing, plough again, running the furrows crosswise; then harrow and roll and harrow again, until

every clod is broken up. Thorough preparation of the soil should never be shirked, for it is more than half the battle. Let me caution you not to have the ploughing done if the ground be wet. Much of the disappointment which city people experience arises from the natural desire of the amateur to get to work. Earth ploughed, dug or hoed when wet or soggy will bake and crust all summer. The right consistency can be ascertained by picking up a handful and squeezing it. If it remains a solid lump it is too wet, but when it presses together easily, and as readily falls apart when released, it is in just the right condition to work, will turn a clean furrow and will readily crumble under the harrow. Sod ground is desirable for potatoes, so if there is a strip of grass land which needs renewal, have it well ploughed, harrowed, and marked off in rows eighteen inches apart, for the winter crop.



A CORNER OF THE VEGETABLE GARDEN

Almost every old farmer has a theory about the way and size to cut potatoes for planting. After listening to and trying several methods, we have come to the conclusion that cutting large tubers in four, and small ones through the centre lengthwise, is much better than dissecting carefully to separate every eye, and then using two pieces when planting, especially as the innumerable experiments made at the agricultural stations have revealed the fact that eyes gather nutriment for sustenance and growth from the potato itself, until the sprouts develop stems that form joints, at which point rootlets start, proving beyond doubt that, unless the piece of potato planted is large enough adequately to feed the eye or eyes it may contain, the root growth, which is required to furnish the subsequent tubers with food, must be weakened. We plant one quarter potato to every foot in the row, and cover from four to five inches deep, selecting ground which has been heavily manured the year before, and scattering wood ashes on the surface after the seeds have been covered.

Failing this source, commercial fertiliser specially prepared for potatoes must be bought. Thorough cultivation is necessary to insure a good crop. Soon—

say seven or eight days after planting—run the harrow over the field, to kill the embryo weeds and level the surface. As soon as the plants show, cultivate again, but of course only between the rows, and with an ordinary cultivator. Repeat at frequent intervals.

It is estimated that it takes fifteen bushels of potatoes after they have been cut into quarters, to plant an acre, which should return one hundred and thirty bushels of salable potatoes, by which is meant large and medium sized potatoes, small ones not entering into the calculation. There will be in all probability about thirty bushels of these dwarfs, which are excellent fattening food for poultry and pigs when cooked and mashed up.

The space intended for carrots requires extremely good cultivation, for the soil must be thoroughly pulverised. Tie the seeds in a piece of cheese cloth, steep in water for twelve hours, then hang up in a warm room to drip and dry sufficiently to prevent their sticking together when being planted. Another aid we furnish these delicate seedlings is to drop a radish seed every six inches, because they germinate quickly and throw a strong seed leaf, which breaks the crust over the row and allows the fragile carrot sprout free access.

Allow two feet from the last row of potatoes, stretch the line, and with a pointed stick draw a shallow drill in which to scatter the carrot seed. Covering must not be more than a fourth of an inch; press down firmly. Between each two rows of carrots allow one foot. Steep and use only half the seed at first, planting the remainder twenty days later. With good ground and cultivation you should have carrots late in June.

A thirty-inch space must divide the carrots from the beets. Prepare the ground as before, but make the drill a full inch deep, dropping the seed half an inch apart, the rows two feet apart. These should be ready for use the first week in June. Keep half the seed for late planting.

Early turnips can start another two feet along. Drill half an inch deep, the rows one foot apart.

“First of All” peas are semi-dwarf, but yield much better if given some support. We plant every two rows seven inches apart, in a drill one inch deep, and when the peas are two inches high we stick brush between the rows, so

making a hedge of vine when developed. Twin rows should be two feet apart.

For onion sets, make drills an inch and a half deep, placing the sets upright and from four to six inches apart. Firm the earth all around, and the fourth of an inch over them. These will furnish early onions for cooking. For onion seed the soil cannot be too carefully prepared, for, like carrots, they are long in germinating and extremely fragile. A few radish seeds can again be used as pioneers. Instead of commercial fertiliser, the poultry droppings are used for onions, being reduced to a powder by grinding in an old chopping machine. Sprinkle freely, within one inch of the centre of the row, and from three to four inches each side of it. Unless rain falls within a few days, water very thoroughly with a sprinkler. Hen droppings seem especially desirable for all bulbs and tubers.

Lettuce seed requires well-enriched soil; drill one-fourth of an inch deep, the rows one foot apart.

From the time seeds are put into the ground, cultivation must be continual, raking between rows being frequent enough to destroy embryo weeds. Ten minutes' light work with a rake before weeds develop will save hours of hard labour with a hoe. Cultivation is required, not only to destroy weeds, but to supply air, and encourage all the moisture from the subsoil to travel upward, so nourishing the plant roots as they develop, and preventing the soil from baking. Not cultivating the ground around plants is as injurious to their health as shutting a child in an unventilated room.

Lettuce, cabbage and cauliflower plants should now be planted out. Prepare the rows as for seed, and with the pointed stick used for marking the rows, make holes directly under the line—nine inches apart for lettuce, one foot for cabbage and cauliflower. Put a little water into the hole, pack the earth around the root and stem, water copiously, then draw dry earth up over the wet surface, to prevent the moisture from evaporating or a crust forming. To promote root growth, cut off half the length of the outer leaves with a pair of sharp scissors. If possible, provide some protection until the plants are established.

Tomatoes, peppers and eggplants should be bedded out about the twentieth of May. Tomatoes and eggplants stand two and one-half feet apart, each one in

ground very heavily enriched to a depth of three feet and a circumference of two feet. Pursue the same method of planting as for cabbage, except that instead of cutting the leaves across, nip out the two heart leaves of each plant. Checking top growth makes the plant branch and form a stocky bush instead of a spindly top growth that will break under the weight of fruit when it forms.

If the “home” is to be an ideal haven of rest it must be pretty. Economy may prohibit buying plants for the flower garden, but the exercise of a little forethought will enable you to have a lovely display of flowers all through the summer at a nominal cost. Procure some shallow boxes from your grocer. They should not be more than three inches deep, and about eighteen inches long and one foot wide. If it is not possible to get what you want, saw a six or seven inch box in half, using the lid as a bottom for the second box.

Have the mould thoroughly pulverised before sowing, and prepare an extra quantity to use for covering the seeds. This I do by half filling a rather fine colander and shaking it over the box until there is an even layer over the seeds. The average small flower seed should not have more than the fourth of an inch over it. A board that will fit inside the box should be pressed down hard, to insure the seeds being firmly embedded in the mould. Otherwise the air gets around them and dries up and kills the first frail germs of life. After planting and patting down, sprinkle lightly, and stand the boxes in a south or southwest window in a living room where the temperature averages sixty degrees. The boxes must be watched for what is called “damping off.” It can easily be detected by the sickly appearance of the seedlings, followed by a shrivelling or burning of the stem close to the earth. The moment the danger signal is noticed, prick out into fresh boxes of corresponding size or a trifle deeper. The seedlings need not be planted more than half an inch apart. Prepare the mould in the boxes the same as you did for the seeds, pat down, and with a toothpick make the holes in which the baby plants are to be put, firming the earth around them gently with the forefinger of each hand. Should no suggestion of debility appear among the seedlings, still prick out into fresh boxes when the second leaves unfold.

“Bovee” potatoes, for early garden crop

1 peck, \$0.75

Carrots, “Oxheart”	1 ounce,	.10
Cauliflower, “Early Snowball”	1 packet,	.25
Celery	1 packet,	.10
Beets	2 ounces,	.20
Brussels sprouts	1 packet,	.10
Cabbage, “Jersey Wakefield”	1 packet,	.15
Cabbage, “Autumn King”	1 packet,	.15
Kale, “Dwarf Green”	1 ounce,	.10
Lettuce, “Boston Market”	1 ounce,	.15
Peas, “First of All”	1 pint,	.15
Peas, “Petit Paris”	½ pint,	.10
Peas, “Champion of England”	1 quart,	.30
Turnips, “Early Flat Dutch”	1 packet,	.05
Turnips, “Purple Top Aberdeen”	1 packet,	.05
Turnips, “Rutabaga”	1 packet,	.10
White onion sets	1 quart,	.25
Red onion sets	1 quart,	.25
Onion seed, “Prizetaker”	1 ounce,	.20
Cucumber, “White Spine”	1 packet,	.10
Eggplant, “New York Spineless”	1 packet,	.10
Tomato, “Crimson Cushion”	1 packet,	.10
Pepper, “Ruby King”	1 packet,	.10
Muskmelon, “Delmonico”	1 packet,	.10
Squash, “Long Island” (summer)	1 packet,	.10
Squash, “Gregory” (winter)	1 packet,	.10
Green bush bean, “The Longfellow”	1 packet,	.10
Pole lima bean, “Leviathan”	1 packet,	.10
Okra, “Long Green”	1 packet,	.05
Radish, “Scarlet Turnip”	1 ounce,	.10
Corn, “Country Gentleman”	1 packet,	.15
Herbs—parsley, sage, summer savory, thyme, marjoram, aniseed, wormwood, saffron, tansy	1 packet each,	<u>.40</u>

Total cost

\$4.95



THE HOTBED

THE outer shells of hotbed and cold-frame are identical, and can be made by any handy man. As all sashes are made in one size—namely, six by three—the boxes must correspond; to insure water running off and all the power of the sun being utilised, they must slope lengthways, the top end of a box being three or four inches higher than the bottom. The ordinary box or bed frame is made six feet long, three feet wide and fifteen inches high at the top end, sloping to twelve at the foot, and stands on the surface of the ground, but the plan we have adopted after several years' experience is to dig a pit three feet deep, six feet two inches long and three feet two inches wide, and build the box twenty inches high at the top end, sloping to seventeen inches at the foot, and of course six feet long and three feet wide, which allows it to stand inside the dugout and five inches below the surface of the surrounding ground, so effectually preventing any cold air creeping in around the bottom. We use sound boards two inches thick for sides and ends and two-by-two studding for corner stays.

Very well-made boxes and sashes, which fit exactly, are sold by several of the greenhouse builders for about eight dollars. They are shipped knock-down to save express charges, but they are ready to bolt together. They come in the ordinary six-by-three size, for single beds, or in groups of from three to five, with light partitions for the sashes to rest upon. The five-section bed costs about twelve dollars, but will need five sashes, amounting to fifteen dollars, and the partitions, which I think are about one dollar a piece.

For convenience in bad weather, it is well to have the beds near the house, and, when possible, sheltered from the north and facing the south. Fresh horse manure constitutes the heating power in a hotbed. We use solid droppings and dry leaves, about half and half. It is ripened in the manure-shed by being made into a heap about three feet high and three feet wide, thoroughly sprinkled with liquid manure. It is allowed to stand some weeks after mixing, then twice forked over, two weeks intervening. All the

droppings should be well broken up and mixed with the leaves, and the entire mass repiled between each forking.

After the ripening process has been accomplished, it must be packed into the bottom of the hotbed to the depth of two and a half feet. It should be smoothly laid and well tramped into place. Put in the sash, and within a few days the heat will rise to a hundred degrees or over. Lift the sash slightly at one end, and wait until the temperature falls to about eighty-five degrees, then place about six inches of rich, fibrous soil over the top. We manufacture our potting-mould several months before it is required, by taking the old heating material from spent beds and mixing it with an equal amount of soil from sod land and about one-third the quantity of clean, sharp sand. After thorough mixing, it is piled in a large heap and left exposed to the weather until required, or until late in the fall, when it is put into a shed and kept dry to prevent freezing, as potting-mould and covering for fresh hotbeds is often needed in the early spring. Just before using, it is passed through a sieve to remove all lumps.

The first year, when there is no old bed to empty, good top-dressing or potting-mould can be made by cutting deep sods, shaking the earth from the roots and mixing it with an equal amount of old, well-rotted cow manure and about one quarter the amount of clean sand. It is imperative to prepare all such things in the fall. The outside of a hotbed should be banked up with rough stable manure and the sash covered at night with mats and shutters in extreme cold weather. Old carpet or bags made of burlap and filled with cut hay will cost nothing except time and answer quite well. We use pads, for which all sorts of old clothes are utilised. Then unbleached sheets large enough to cover the sash, side and ends, and reach well onto the ground, are used. The sheets are given two coats of oil, and so are impervious to rain or snow, and we think better than wooden shutters.

Suppose you want to make your first venture with winter salads, the first gathering for Thanksgiving, and from then on until spring. Start one bed the first week in October, sow three rows of lettuce seed five inches apart, sowing three different varieties, Tennis-Ball, Boston Market and Big Boston; two rows of curly cress (peppergrass) the same distance apart, and five days later, two rows of white mustard. Eight or ten days later, prepare a second

bed, so that the heat may have risen and decreased to about seventy-five by the time lettuce is large enough to transplant—about three weeks from the sowing of the seed. Set out the seedlings eight inches apart each way in the new bed, and sow radish seed between the rows.

If you have enough frames, plant the three different varieties of lettuce in different beds. They will mature in the rotation named. Between the rows of the Boston Market and the Big Boston, onion seeds may be sown. When selecting lettuce to transplant, choose the strong seedlings and from different parts of the rows, so that when the surplus plants are thinned out, the rest will be left to grow undisturbed.

The mustard and cress will be ready to cut in from seven to ten days after the mustard is sown. Cut the cress with a pair of scissors a little above the soil and it will spring again and again. Mustard must be sowed after each gathering, but as it only takes half the time to develop, it will be ready when the second crop of cress is. Mustard should be allowed to grow more than an inch and a half above the ground. One important thing to remember in running a succession of hotbed crops, is that the heating power of manure only lasts about seven weeks. Beans, beets and Swiss chard, and such hardy things, which require two months or more to mature, do not suffer through the decrease of heat, in fact, will do just as well, or better, in a spent hotbed or cold-frame, which is just a hotbed without any heating material. But if very cold weather sets in, bank up heavily around the sides and ends with fresh manure, to keep the cold from penetrating the bed-box, and using extra heavy mats over the sash at night.

Eggplant, tomatoes and peppers should be started the last week in February, and celery, cabbage, cauliflower and Brussels sprouts about the first of March. One bed should be devoted to onion seed (sown at the end of February), and seedlings can be pricked out into another bed or cold-frame when about two inches high, and will be strong bulbs to plant out in the garden in April. Cucumbers, muskmelons and squash can all be started on sods in a hotbed, early in April, and will be sturdy plants by May 20th.



HOW TO GROW ASPARAGUS

WHY every garden has not an asparagus-bed is an unfathomable mystery to me. It is universally liked; even epicures consider it a delicacy. It is ready for table use in very early spring, when everyone craves fresh vegetables, and it is as easy to grow as any other vegetable after it is once established.

Probably the last word explains the mystery. It takes three years to establish, or, rather, to bring it to the profitable stage. A light crop can be gathered the second season, so the home table profits almost as quickly as in the case of artichokes or strawberries. Whatever the cause, the fact remains that an asparagus-bed is rarely found on a farm. Yet the pecuniary advantages to be reaped from asparagus-growing are sufficient to satisfy the most ambitious gardener.

Three years after our first bed from seed was started we sold three hundred and fifty-four bunches at an average of forty cents a bunch. Early in the season we got fifty cents, toward the end of the season some were sold for thirty-five cents. Since then the annual returns have never dropped below two hundred and eighty-six dollars. Manuring and cultivating cost approximately twelve dollars a year. The bed occupied about a quarter of an acre of ground. Having a number of egg customers, we sell direct and so get the full price, but even wholesale prices range from fifteen to twelve cents.

There are two ways of starting beds, sowing seed or setting out plants. One-year-old plants will cost from sixty cents to a dollar a hundred. Planted in April and well cared for, they will provide several dishes for the home table the following spring and nearly a full crop the second spring. Seed sowed at the same time will take a year longer, but after that will give a larger yield than the transplanted plants and, as asparagus-beds are productive for fifteen or twenty years, the one-year loss in the beginning is an economy. But it is well to set out a few plants, simply because in the country one cannot get

Southern vegetables, which come into the city early in the spring, and, therefore, should try to have a home supply as quickly as possible.

In selecting ground for an asparagus-bed, it must be remembered that it is a permanent crop, and cannot be transplanted after it is established. It will grow on any ordinary garden soil which is well drained, but, when possible, heavy subsoil with light sand or loam above it should be selected, as it will invariably produce an earlier crop each year than heavy ground. The soil should slope to the south or southwest, and a shelter from the northeast is also desirable. For our large market bed we used land that had been under cultivation for two years. The preceding crops had been corn, oats and potatoes, so it had been thoroughly worked.

After the potatoes were harvested in the fall, the field was ploughed, and barn-yard manure scattered broadcast over it. Early the following spring the ground was again ploughed, to turn in the manure, and harrowed each way to thoroughly break up and pulverise the soil. Should you be compelled to use ground that has not been worked previously, and is of a heavy, damp character, it would be well to plough as early as possible in summer, if necessary, using a subsoil plough, to break the ground to a depth of fifteen or sixteen inches.

Harrow to smooth the surface, and repeat the harrowing about every three weeks until October, when it should be ploughed again to the depth of six or seven inches, manured and left until spring. After the spring harrowing the rows must be marked out five feet apart and running from north to south. Use the plough back and forth in the same furrow to make a wide trench, which should be six or seven inches deep and about a foot wide. If much of the soil falls back into the trench, remove it with a spade or broad hoe, then plant seed about three inches apart. Keep the rows free from weeds all through the season and the ground loose around the plants.

It is desirable to utilise the space between the rows, as it insures the ground being well cultivated. Each space will accommodate two rows of carrots, onions or lettuce, or one row of cabbage. In the fall, when the tops of the asparagus begin to die, they must be cut off and burned.

The following spring the ground between the rows should be manured and

ploughed, or spaded if the place is an inclosed garden and a plough cannot be used. Strong roots may throw very good-sized sprouts, but don't be tempted to gather them, for their removal will stimulate the plant to throw up more stalks than its age warrants, and the result will be either death or a weakly, unprofitable existence for several seasons. Not more than one row of carrots or onions should be grown between the rows the second season, and, unless space is of great value, it is as well not to use it at all.

Cultivation must be kept up all through the growing season, to destroy weeds and keep the ground in condition. Many amateurs have an idea that hoeing or cultivating of any sort is solely to destroy weeds, which is a great mistake. Stirring the surface soil breaks the crust, and the powdered earth forms a mulch which keeps the lower soil moist, a condition which liberates the mineral qualities which constitute plant-food.

The second spring after sowing seed a light crop of stalks may be gathered, say two or three from each hill, but not more. Then allow the stalks to grow and feather out until they assume their full fern-like form. In June apply a moderate quantity of barn-yard manure between the rows if the ground is not being used. If it is occupied by a crop, use commercial fertiliser composed of equal parts of nitrate of soda, sulphate of potash and wood-ashes. Scatter each side of whatever vegetable occupies the space between the rows and work the fertiliser well into the soil.

In August, when the crop is harvested, apply a moderately heavy dressing of well-rotted barn-yard manure. Late in October cut down stalks and burn, as the year before; then plough or spade between the rows. The third spring will bring the bed to a profitable state, though it will not reach its full yearly capacity for another year. Use the one-horse cultivator or hoe between the rows as early as the ground can be worked. Draw the earth slightly from the roots at first, to permit the sun to warm the ground around the roots and awaken the plant to life.

A week or so later, if white asparagus is desired, the soil must be again drawn up over the plants and each row hilled up so as to bleach the sprouts. The operation will need repeating about once a week all through the cutting season, which should not last more than three weeks on so young a bed, though in future years it may be kept up six or even eight weeks.

After the cutting season throw down the ridges made by the hilling-up and apply either barn-yard manure or commercial fertiliser, repeating the application about July 1st. If green asparagus is desired, the only difference in treatment consists in omitting the hilling-up.

After the third year care of the bed consists of manuring and cultivating. We have found it best to use barn-yard manure and commercial fertiliser alternately. Sowing the seed in trenches or deep furrows is done to insure the crowns being three or four inches below the surface when they have developed considerable growth, which would not be the case if they were sown on the level ground to commence with. Like its cousin, the lily of the valley, asparagus sends out roots and stalks from a heart or crown, which must be underground where it is moist and dark.

Asparagus may be canned like any other vegetable for winter use; pack, cut ends down, in glass jars, fill jars with cold water, put the lids on loosely, stand in hot water, boil three hours, fill the jars to the brim with boiling water and screw lids down tight.

If you consider that raising from seed is beyond your patience, buy plants from a reliable grower. Most nurserymen's catalogues quote one and two year plants, but the experienced are unanimous in preferring strong one-year-old plants, affirming that they stand being transplanted better than the older ones. The ground must be prepared as for seed. When the plants arrive, put them into water for twelve or twenty-four hours to soften. Set the plants two feet apart in trenches, being careful to have the crowns right side up. If you hold up a plant in your hand you will notice that the thick fleshy roots all proceed from the heart, or crown, as it is called, and droop downward, and that on the other side of the crown there are what look like small rootlets. These are really the dry stalks from the preceding season and buds of the coming season, and are often mistaken for roots and placed downward in the trenches instead of upward, which of course they should be.

The proper way to plant is to make a small mound at the bottom of the trench—about two handfuls of soil—and spread out the roots, and place the crown on the mound of earth in such a way that the roots envelope it. Press them firmly into place, and cover until the crown is about two inches below the soil. If it happens to be a dry season, water regularly until growth is well

established.

Asparagus must be cut very carefully, otherwise the embryo shoot may be destroyed or the crown itself killed. When only small quantities are being removed each day, the best plan is to pass the thumb and forefinger down the spur an inch or two into the ground, then bend outward, and it will snap below the surface of the earth without injuring the plant in any way. When large beds are being cut for market, a knife will have to be used, as it does the work so much more quickly. Asparagus-knives are of special shape. There are several on the market, and they will be found advertised in all seedmen's catalogues. The average price is fifty cents.

Rust, a fungus disease, has become very prevalent during the last few years, attacking both young and old beds. As the name implies, it looks like rust on the stalks and spoils the appearance for market, besides injuring the plant and materially affecting the crop.

It has been suggested by many who have studied the subject that rust originates on decaying stalks. For that reason it is advisable to burn the dead stalks as soon as they are cut away in the fall, instead of allowing them to decay on a compost-heap, as one does with other garden trimmings. Spraying with Bordeaux mixture after the cutting season each year has been recommended as a preventive. Once established, there seems no remedy. We have a neighbour whose beds were seriously affected seven or eight years ago. He tried a number of ordinary washes and powders, but they seemed useless. Six years ago he started new beds and adopted our plan of alternating commercial fertiliser with barn-yard manure as we had never had any sign of rust, and he attributed it to the ashes in the mixture we used, thinking that they purified the ground.

Another enemy is the asparagus-beetle—an attractive-looking insect, jet black, with red, yellow and blue markings. It remains hidden in brush or rubbish through the winter and comes out in the first warm days of spring to lay its eggs, always choosing the young, tender sprouts for their resting-place. In a few days the young grubs hatch and feed on the asparagus, boring small holes, entirely ruining the appearance of the stalks, and occasionally descend to the crown of the plant itself. It only takes the grubs a month to pass through the several stages which bring them to maturity, so that if only one or

two beetles survive the winter, there may be an army by the time the beds are bearing fully. Allowing poultry to run on the beds in the fall and winter is about the safest and easiest way of scotching the pests, though dusting with air-slaked lime in the early spring is recommended, and some authorities suggest the cutting of the beds as soon as shoots develop in the early spring, hoping in that way to destroy the eggs. This is rather an expensive remedy, as it means burning up the early market crop, which brings the best prices.



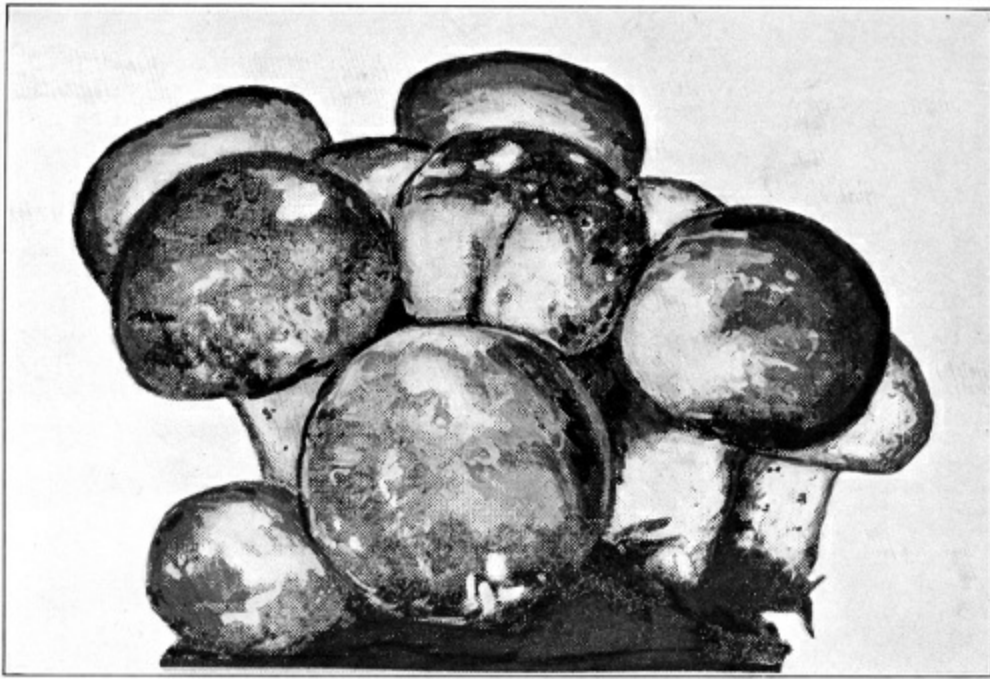
HOW TO GROW MUSHROOMS

ANYONE who has a good cellar where an even temperature can be maintained can grow mushrooms for home use, but if they are to be raised in large quantities for market, an appropriate building must be given over to their exclusive use. We have been successful for several seasons in growing mushrooms in an amateurish way, but it was not until a large root-cellar was left vacant that we thought of the feasibility of adding them to our market products.

The farm we were lucky enough to acquire was one of the old-fashioned, practical places, with a full equipment of buildings. Under the cow-barn there was a stone basement, used for the winter storing of root crops. After our dairy herd developed, it seemed wise to use ensilage instead of roots during the winter. So we built a silo, and this left the store-house vacant. It was eighty feet long and fifteen feet wide, so, after we conceived the mushroom idea, we partitioned off thirty feet to retain as a storing-place for household vegetables and fitted up the other fifty feet with mushroom-beds.

We put in a brooder-house stove and pipe system, which cost one hundred and twenty dollars. The lumber for the beds cost an additional thirty dollars, extra manure twenty-two dollars and spawn fifty dollars—two hundred and twenty-two dollars in all. Four months later we had received four hundred and forty-five dollars. Since then the returns have fluctuated between four and five hundred dollars, and we estimate that it costs one hundred and twenty-five dollars per season to produce the crop. So I think that mushrooms can be considered profitable when run in connection with poultry or general farming, especially as they come in at a season of the year when there is very little else to be attended to, and, what is more, the only heavy work is preparing manure and compost for the beds, and that any ordinary farm man can accomplish. The rest is all so light and easy that a young girl or a delicate woman can attend to it without fatigue.

It is not necessary to have an expensive stone or brick building. We have a neighbour who uses part of an old cow-stable, and a man in the suburbs of New York, who grows a quantity each season, has simply a dugout with rough board walls, two feet above the ground, and an A-shaped roof—all covered with tar-paper, a place that could not have cost more than seventy-five dollars at the very most. A shed or outbuilding of any kind will answer if it is weather-proof and can be kept at a temperature of fifty-five or sixty in zero weather without much expense.



MUSHROOMS

Don't be tempted to start on any elaborate scale in the house-cellar, for the odour from the beds whilst the manure is heating prior to planting-time will permeate the entire house and cling to carpets and draperies in a most horrible way. Of course, this does not obtain when only a few are to be raised for the home table, because shallow boxes can be used and need not be carried into the cellar until the objectionable period is past.

When a special house is used, the beds may be made on the floor, a great

depth of manure used and artificial heat dispensed with. But it is not a good or economical plan, for the necessary amount of stable manure would cost as much as fuel, necessitate close watching and the result would not be as satisfactory, so we will only consider the approved method of benches and artificial heat, which is generally adopted by the modern market grower.

The benches in our house run on each side, leaving walks three feet wide through the centre of the house, two feet along the side walls. Having the three walks enables us to gather from each side of the beds, which is almost a necessity when the beds are four feet wide. With a narrower house and beds, a centre path would be sufficient, but it should not be less than three feet wide for convenience when filling and emptying beds.

The benches are made of two-by-two studding and rough hemlock boards, the studding being used for the upright supports which go from floor to ceiling, every five feet of the entire length and on each side of the house. Supports are run diagonally between each four uprights on each side of the house, to make a foundation for the floor of the beds, as well as to strengthen the entire structure. The hemlock boards are used for the sides and bottoms of the beds, which are two feet above the ground. Beds should be sixteen inches deep, but we used one row of boards nine inches wide and another row six inches wide, as the boards happened to be cut in those sizes.

The second tier of beds, which were added a year later, were a foot and a half above the top of the first tier and only twelve inches deep, but have proved quite as satisfactory in every way, and as the shallow beds take less manure, I think it is safe to advise beginners to adopt the latter depth for beds in a house where artificial heat is used.

The bottoms and sides of the beds should be fixed so that they can be easily removed, as it facilitates the work of emptying beds, which has to be done every spring. Any heating apparatus which can be easily arranged and depended upon can, of course, be used, but I think the stove and pipes which are specially made for poultry plants are the most convenient, as their construction is so simple that any handy man can fix them without the aid of a plumber—a great consideration on the farm.

Narrow cellar windows were inserted in the sides of the house, to furnish

light and air in the spring and fall, when the heavy work was being done, and also while gathering each day during the season. It is so much pleasanter to work by daylight, and it does not injure the crop in any way, if shutters are used to keep out the cold.

The main factor in mushroom-growing is beds. First, the material of which they are composed; secondly, the way they are made. Fresh manure, with a fair percentage of short bedding (straw or leaves preferably), must be collected each day when the stables are cleaned. We use two parts horse and one part cow manure, sometimes substituting sheep-droppings for horse. The daily collection must be stored in a shed and made into a pile about three feet high and two and a half feet wide.

As soon as sufficient manure is collected to fill the beds, the curing process should be commenced. This consists of packing manure closely together, and if at all dry, slightly moistening it with water or drainage from the stables to start fermentation. Within a few hours the heat will commence to create steam and it must be forked over and made into a fresh pile.

To check the heat, which would, if left to run its course, quickly burn out the value of the manure and render it worthless, forking and repiling will probably have to be repeated three or four times, with from two to three days intervening, according to the strength of the manure and the temperature. It usually takes from two to three weeks to cure manure properly. When it shows a temperature of one hundred degrees Fahrenheit after being undisturbed for thirty-six hours, it may be considered all right.

We half fill beds with the rough material, then mix soil from sod ground with the remainder to fill up the top of the beds. The proportion is about one-third soil to two-thirds prepared manure. When filling the beds, the manure, and also the mixture of soil and manure, should be strewed in thin layers, say about two inches at a time, and stamped down thoroughly before the next layer is added. When the beds are filled, cover the surface with straw or mats to prevent the beds becoming dry.

The manure will heat considerably after being packed in the beds, so thermometers should be inserted every few feet, as planting must not be done until the temperature falls to ninety degrees Fahrenheit, at which stage the

straw or mat can be removed and the spawn inserted. The propagation of mushrooms is entirely different from that of any other vegetable, neither seed, bulb, nor cutting holding any place in the process. From the gill-like lining of a full-grown mushroom fall innumerable spores, so minute that if caught on a sheet of paper they would look like dust. If the spores fall upon earth that is in just the right condition, mould-like filaments develop, spread and become what we call spawn.

Spawn culture is a complicated process, which concerns the grower of mushrooms not at all, as he buys spawn as he would any other seed, except that it is sold in compressed brick-like cakes, which weigh about a pound apiece, or in rough shreds; the latter variety being known as flake or French spawn.

Bricks, known as English spawn, seem to give the best results in this country and are what we have always used. They should be broken into pieces about the size of a walnut, planted in rows a foot apart, the pieces being six inches apart in the rows. The spawn should be inserted about three inches. The best plan is to lift a small part of the manure with a hand fork, press down the spawn, replace the manure and press firmly in place. The close packing is one of the principal points of success, so it is well to go over the entire bed with the back of a wooden shovel or a small mallet.

After planting replace the straw or mats if the temperature of the house is at all dry. Eight days later remove the mats and cover the beds with a layer two inches thick of good garden soil.

Until the mushrooms begin to appear the temperature of the house may be sixty-five to sixty-eight degrees Fahrenheit, but from the moment they commence to appear keep it as nearly fifty-five as possible. Moisture must be carefully watched. If the beds appear at all dry, even after the soil has been placed over them, cover with mats for a few days or even sprinkle the beds very lightly, but they must not be made at all wet. Perhaps the safest plan for the inexperienced is to sprinkle the walks, as then there can be no danger of an overdose.

It takes about five weeks for spawn to spread through the beds and about another two weeks before the crop makes its appearance. Well-made beds, in

a house kept at fifty-five degrees, will yield for ten or twelve weeks, but during the last two or three weeks the quantity will decrease rapidly.

Gathering must be done every day, and in the height of the yield it is wise to go through the beds twice a day to avoid the loss which occurs within a few hours from overripening. When the mushroom first breaks through the ground, it is apparently a solid, white ball, balanced on a miniature column. A few hours, and the under part of the ball breaks from the stock and the mushroom gradually spreads like an umbrella being opened and shows a line of pale pink, or flesh-coloured, gills, which become darker every hour until almost black, at which stage the mushroom becomes thin and rapidly decays.

If mushrooms are gathered just after the veil (as the skin which attaches the edge of the cap to the stock is technically termed) breaks, they can be held over for twenty-four hours without deteriorating, if kept in a cool place away from the air. If, by chance, some open ones escape the picker's notice, remove them as soon as seen.



SIX GOOD VEGETABLES TO GROW

IT is strange that many of the most useful vegetables are neglected in the majority of home gardens. Okra, Swiss chard, leeks, Brussels sprouts and Scotch kale are really little known, yet they are all appetizing health additions to the table, and require no special conditions or culture.

Okra, or gumbo, as it is invariably called in the South, figures very largely in Creole cooking, but here in the East is only just appearing in the markets. The demand is sure to grow rapidly, because it is one of those insidious articles which seem indispensable when once used. Soups, stews, gravies and innumerable made dishes are all improved by a little okra, and it is the basis of many special dishes. My household is fond of gumbo soup, so for that alone okra had to have a place in the garden, and now we use it in a dozen different ways. Cut into slices and spread alternately with rice and tomatoes in a casserole, with butter, in which curry-powder and salt has been mixed, dotted all over the top and baked for three hours, it is a deliciously savoury luncheon dish.

But it is the growing, not the cooking, of this neglected vegetable that I have to do with just now. The ground for okra should be thoroughly enriched and well cultivated. Make a furrow about an inch deep, and if only a home supply is wanted, about thirty feet long. Sow the seeds two inches apart in rows and cover. Thin to eighteen inches apart when the seedlings are about two inches high. If more than one row is to be grown, make them two and a half feet apart.

Okra is a semi-tropical plant, so is better not sown until the second week in May. Once started, it grows very rapidly, yields and continues a supply of pods throughout the season. The flowers are large and rather pretty, but only last a few hours; after they fall it takes about twelve hours for a pod to develop sufficiently for gathering. To be in perfect condition for cooking they should not be much more than an inch long. Any surplus quantity can be

dried or canned for winter use. Sliced, they are a splendid addition to mixed pickles.

Swiss chard is such a true cut-and-come-again that for home or market it is invaluable, and a poultry-keeper can find no better or cheaper green food for fowls that are yarded. The leaves and stalks are the edible part, and can be boiled like spinach or the stalks alone used. They are white and run the full length of the leaf. Cut them out and tie loosely; cook and serve just as you would asparagus. The new variety called "Lucullus" is, I think, the best. Make the ground very rich; sow in rows three feet apart, about the end of April or the first week in May. Thin the plants when they are about two inches high to stand eighteen inches apart. When used as spinach cut the leaves when they are ten inches high, but when the stalks are to simulate asparagus gathering should be delayed until they are about fourteen inches high. Then cut off the green part of the leaf, which can still be used as greens. No matter how the leaves are to be used or at what height the crop is cut, be very careful never to injure the heart of the plant, for if you do successive crops will be spoiled.

Brussels sprouts have been gaining favour in the market during the last few years and should certainly be in every garden, for they possess all the healthful qualities of cabbage, and the flavour is much more delicate.

When small, the plants look exactly like cabbage, but instead of firm, solid heads, the stalks run up to twelve or fourteen inches in height, and baby cabbages spring out all around the stalk for the entire length. One plant often yields thirty-five or forty of these diminutive cabbages.

One great advantage of Brussels sprouts is that the seed need not be sown until June and the plants are not ready for transplanting until July, so can succeed early peas in the same ground. Like all members of the cabbage family, Brussels sprouts are gluttons and positively must have heavy and rich ground. Sow seed in shallow drills; transplant when seedlings are about three inches high, two feet apart in rows three feet apart. For early spring harvest, sow seeds in hotbed during February or March. Mature plants are quite hardy, but must be dug up before severe frost. The best way to keep the home supply is to hang the whole plant up by the roots in a frost-proof cellar.

Leeks and winter onions are members of the onion family which are usually overlooked, and it is a great pity, because they are both most desirable. Leeks should be sown on very fine, rich soil. A heavy dressing of poultry manure, applied the fall before planting, is an ideal fertiliser. Scatter the seed thick in rows two feet apart and thin out the plants so that they stand nine inches apart. Cultivate the ground constantly and hill up as the plants grow. This is a part of the work which must not be neglected, as it encourages the growth and bleaches the stalks. A slight frost won't hurt them, but they must be heavily banked up and covered with litter if they are to stay out in the ground until spring.

The winter supply of these vegetables should be dug in December and stored in the house for convenience. Pack them, standing up as they grow, in boxes; scatter earth between them, and keep them in a dark cellar. For soups they are much superior to ordinary onions. Boiled and served with white sauce, they are a most enjoyable vegetable.

Winter bunch onions, as they are termed, are really the earliest of all spring onions. Sow the seed in shallow drills, a foot apart, in May or June. Cultivate until fall, then cover with litter. Early in the following spring rake off and cultivate lightly between the rows, and you will have delicious green onions for table or market when other people are thinking about sowing the seed.

Kale should be considered indispensable in every garden, for it comes into season late in the fall, when frost has demolished all other greens. Even in the vicinity of New York it can be relied upon to furnish early spring greens almost before the snow is off the ground. In fact, I have gathered it from under deep snow in midwinter and found it in good condition. Seeds should be sown about the middle of June, and the seedlings transplanted into rows two feet and a half apart. The leaves are curly and of a dark green, and should not be used until there has been some frost, for until frozen they are as tough as they are tender after Jack Frost has visited them.

As soon as the weather becomes colder, bank straw or leaves on each side of the rows up to the top of the kale and then put cedar branches or brush of some sort along each side to keep the covering in place.

Kohlrabi is another valuable vegetable, which comes in when other things

have faded. It really belongs to the cabbage family, but it is more like the turnip. The edible part is the bulb which develops above ground. When cooked it looks and tastes like a most delicately flavoured turnip. As they must be cooked while young and tender, it is best to make several sowings; one in the hotbed in February, and two others in the open ground; the first in May, the second in August. They can stand quite a heavy frost and so are usable until December or January, according to the season.

Sow in rows placed about two feet apart, and after the young plants have attained sufficient strength to withstand attacks from beetles and such insects, thin them to two feet apart.

Perhaps it is as well to add a few hints about the general cultivation of these vegetables—hints which will be useful for all gardening. Cultivation must be constant and thorough, especially when the soil is light and sandy. Of course, no good gardener will permit weeds to get a foothold in his territory, but the constant use of the rake is much more important, for it keeps up the supply of moisture in the soil around the roots of the plants, and so insures their being well fed and making rapid growth.

This is a point which always seems to puzzle inexperienced gardeners, so it needs explanation. Stirring the surface soil with a fine rake as soon as it is partly dry after a rain, furnishes a mulch of dust which prevents the moisture in the lower earth escaping, because it checks the capillary process by which moisture travels to the surface and is carried into the air. The soil may be rich in the mineral and animal components which constitute plant-food, but unless moisture is present in sufficient quantities these are not available as sustenance for plants.



HOW TO PLANT AND CULTIVATE STRAWBERRIES

JUST why growing one's own strawberries should create a sense of superiority is difficult to say, but it does. City friends, who accept really difficult agricultural accomplishments with matter-of-fact indifference, tender a sort of wondering respect to the strawberry-grower, and what is more extraordinary, the grower invariably accepts the laudation with the condescending pride of a victor. At least, I must own to some such feeling, even though I know how absurd it is, for the small wild berry is indigenous to this country and was adopted by the thrifty colonial housewives as a garden-plant long before the horticulturists dreamed of taking it under their scientific management.

The cultivated strawberries are somewhat like exotics, having been created in Europe from the native wild berry and a somewhat similar wild plant brought from Chili in 1750. Varieties resulting from that cross were subsequently brought to this country and furnished the stock from which has gradually been developed the large, luscious fruit of to-day. But it still likes American soil and so will thrive in a wider range of latitude than any other cultivated plant.

There are several strawberry farms in our vicinity and, according to the owners, they bear most profitable crops. One grower tells me that he averages six thousand quarts to the acre, and gets an average price of eight cents a quart. Another neighbour says he calculates to clear three hundred dollars an acre from his berries. Personally, I can't quote figures, because we have never gone in for market berries. Being very fond of them, and wanting the very best we could possibly grow, we have always confined our efforts to garden culture, just for home consumption, and the reward has been such epicurean feasts that we have been satisfied.

Like asparagus, strawberry beds should be established as soon as the family

has settled in a country home, because it takes a year to get a full crop. There are a great many varieties to choose from, but I think it is best to restrict selection to the old established kinds. The Marshall for first early, the Glen Mary for mid-season and the Gandy for late gathering. And truly I don't believe there can be a better selection for the home garden in the vicinity of New York.

But, as some varieties do better than others in a certain locality, it is advisable to consult old residents in the neighbourhood and the nurserymen from whom plants are ordered.

Light sandy soil, sloping slightly to the south, will produce the earliest berries, but we are convinced from experience that slightly heavier soil and a more northerly exposure produces a better fruit in mid-season. Our beds all slope to the south, but the late varieties are so situated that they are slightly shaded by a row of young pear trees, which protects them from the direct rays of the sun. The soil is—or rather was—of ordinary quality, neither very sandy nor very heavy, so for several seasons we scattered fine coal ashes between the rows of the early plants, which materially lightened the soil, and for several years we have had berries from five to ten days earlier than our neighbours.

New beds may be started in the fall or spring, whichever is the most convenient. If the plants are set out in the early fall, they will bear the following season, but if planting is delayed until spring, it will be a full year before any fruit can be expected. So I recommend August planting of all plants to the beginner, and spring planting when there are established beds to take other plants from.

To explain: Strawberries are propagated from the runners, which, under natural conditions, shoot out from the parent plants and, taking root, develop individual crowns. But the up-to-date nurseryman has of late years taken to sinking small pots filled with rich earth in the beds, then by lifting the ends of the runners on to the pots the roots of the young plants develop within the pot instead of on the ground and can later in the season be removed without any check to growth, which, of course, greatly facilitates the growth of the crown after it is set out in its permanent position.

Pot plants, as they are called, are slightly more expensive than layer plants, but they are well worth it when time is an object.

Before the plants arrive the ground should be thoroughly prepared by digging and raking until it is in a fine fibrous condition. Mark off rows four feet apart. When the plants are received, unpack and water copiously, and leave in a shady place for twenty-four hours before setting out, at which time make a hole with a trowel a little larger than the pot in which the plant has been growing, fill it about half-full of water, and if the plants have been delivered in the pots, remove carefully by loosening the soil, which is done by pushing a small stick through the drain-hole and turning the pot upside down. Then slip out the ball of earth, and put it into the hole which you made with the trowel. Fill in with the loose earth and the process of planting will be complete.

Plants should be set two feet apart in the rows. If they are strong and healthy specimens, growth will start almost immediately, so you must go carefully through the rows in about two weeks' time, when the plants will have commenced to throw out runners. We never allow more than four for each plant, and those are trained to root as nearly as possible before and behind and on each side of the parent plant, which makes a solid row about twenty-seven inches wide at the end of the growing season. The best way of insuring runners rooting is to press them close to the soil, holding them in place either with a small stone or a handful of earth.

After growth stops in the fall, the space between the rows should receive a dressing of commercial fertiliser and be well spaded over. About December 1st a mulch of straw or leaves should be spread over the plants to protect them from the frost. Early the following spring the same work is repeated, and about May 1st the mulch is removed from immediately around the plants, but left on the ground to keep the berries from coming in contact with the earth, and also to keep the soil moist about the roots. The beds must be kept free from weeds at all times.

After the crop has been gathered, a few runners are allowed to develop and are rooted in pots, as explained above, to be used in establishing new growth later in August, as we always put out six new rows each season and demolish six old ones, as young plants yield more and better fruit than old ones. For

market the culture cannot be so careful, because the size of the beds will necessitate the use of horse cultivation. What is more, pot plants cost too much.

The successful market grower, to whom I have referred previously, practises the following method: The ground from which early potatoes have been harvested is sown with oats and rye, and when that crop is removed the following summer the ground is ploughed, harrowed and marked off in rows four feet apart, and the plants are taken from the field set out the year before.

When the field is planted in June, a man goes through the rows about August and covers the tips of the runners with a little soil, to hold them down to the ground. This work is usually done by a man's foot and a hoe; then, after growth stops in the fall or before it starts the following spring, the young plants formed from the runners are severed from the parent plant and taken up. This is accomplished by running a one-horse plough along the outside of the rows to cut the runners and throw out the plants, so making it easy for a man to go along and pick up the strongest plants, which are carried to a trench in some convenient location and left until the following June.

The trenches are made about six inches deep and the plants are set about one inch apart, and the trench refilled. Again a man's foot and the hoe do the work. The idea is that severing plants while in a dormant condition and storing them closely in a trench prevents their feeling the shock of removal from the parent stem and retards growth until time to bed. Of course, when they are removed to permanent rows, they are planted one foot apart and fields are kept free from weeds by the use of a one-horse cultivator between the rows.

Even in field culture the runners have to be attended to as soon as they commence to form. Allowing several to develop from each plant will make the row a comparatively solid mass of from fifteen to eighteen inches wide at the end of the season. A field set out in June or early July will give a full crop the following year and be nearly as productive the second year if early cultivated and fertilised, but after that should be ploughed up and the ground used for potatoes, cabbage or some other crops before it is again used for strawberries.

The ground on which strawberries are to be grown should have been well enriched with barn-yard manure for previous crops, but commercial fertiliser should be used while berries hold possession of the ground, for barn-yard manure is apt to contain the spores of fungus diseases which attack strawberries. Any sign of these diseases should be instantly checked by spraying with Bordeaux mixture. One thing more. When purchasing plants, remember that there are what are called perfect and imperfect plants. The latter are just as good for all practical purposes if planted side by side with perfect plants, but not otherwise.

HOW TO GROW SMALL FRUITS

IF gathered when ripe, and served at once, berries—in fact, all the small fruits—are undoubtedly luxuries. So the country home should always devote some space to them, no matter how small the garden may be; and when the home is a farm, expected to become self-supporting, the berry orchard should be established immediately after taking possession, for the outlay is little, returns quick, and necessary knowledge is very easily acquired. Therefore, small fruits are a permanent branch of husbandry to be recommended to the amateur of small means, who needs a marketable commodity to keep the pot boiling.

Like most old farms, our place had a few neglected currant bushes, a patch of half-wild black and red raspberries, and a strawberry bed in a most demoralised condition. But even these poor degenerates convinced us of the economy of growing small fruits for our own use, and the profit to be derived by supplying other people's tables. Besides the luxury of having freshly-gathered fruit, there are preserves, jellies and cordials for winter use. At the end of the first year we thoroughly pruned and cultivated the old brambles, and planted half an acre with brambles and black and red currants. Afterward the space was enlarged, until we had a good-sized berry orchard, which has always shown a profit even in the worst seasons. Brambles will grow in almost any ground, but if well fed and given a congenial home they yield much better. The fruit is larger, better coloured and finer flavoured. So, when possible, select ground that is somewhat sandy in character, with a heavy subsoil. Ground that has been under cultivation for two or three seasons is best, because it will have been well worked, and so will be comparatively free from weeds. Commence with a small patch, say half an acre, divided equally between black and red raspberries, blackberries and black and red currants. Strawberries cannot be included in a general small-fruit orchard, because the beds are profitable for only three years, and it is better to take them into regular crop rotation, using ground that has previously been occupied by potatoes or corn. As space is somewhat limited, we will devote

this chapter to brambles and currants.

There are new plants for favour each year in nursery catalogues, but we will cover only a few of the old stand-bys, such as the following list: Raspberries (red), Columbian and Cuthbert; (black) Gregg and Cumberland; blackberries, Wilson and Taylor; currants, Red Cherry and Fay's Prolific; gooseberries, Industry and Pearl. The best plan is to purchase a few dozen plants of each variety from some good nursery for parent stock, and when they are once well set, do your own propagating from them. Raspberries should be set three feet apart, in rows five feet apart. Have the ground well dressed with stable manure, and mark off in rows. It is best to use a plough for the marking, as you then have a furrow about the right depth in which to plant. If the plants have travelled far, stand them in a shallow pan or half barrel, and cover the roots with water for ten or twelve hours before planting. Brambles that are kept well trimmed need no staking out, but when planting young stock it is well to have some stakes cut about four feet long and pointed at one end. Drive one every three feet along the rows, and then set the plant close up to it. Spread out the roots in the natural form, and firm the earth well around them, then tie the canes loosely to the stake, to prevent the wind from blowing them from side to side. Unless stakes are used at this time, brambles or small bushes sway from side to side in every light breeze, and the roots are loosened, thus preventing them from gaining any hold on the ground. Cultivation should be as thorough and constant as for corn until August, as it is required to keep down weeds and permit growth. After August, cultivation should stop, to check the growth and allow the summer wood time to ripen before frost.

To those who are new to gardening, the above may need some explanation. Cultivation—by which is meant stirring the surface soil with the cultivator or garden rake—prevents the moisture from escaping from the ground. Moisture releases and brings into consumable form the different properties of the soil which constitute plant-food. A bountiful supply of nourishment naturally promotes growth. Stop cultivation, and food decreases, growth stops, and the tender twigs at the extremity of branches have time to harden sufficiently to resist frost that would kill new growth.

Planting and general care are virtually the same with blackberries.

Raspberries are of a weedy or spreading nature, and throw up new shoots from root beds, which must be kept down between rows, or the patch will become a tangled wilderness within a few years. Even during the first summer after setting out it is advisable to top-prune as fresh growth is made. Don't allow the canes to grow to a length of more than twenty inches. The pinching off of the ends forces them to throw out side branches and more canes from the main root, a very desirable thing, as fruit is borne only on the extremity of branches grown the preceding year. After the first year all the old canes which have borne fruit must be cut out. In winter, when sap has returned to the roots, is the best time for this work; but as the amateur may find some difficulty in distinguishing the old canes from the new ones, it is safer to do the demolishing soon after the fruit has been gathered, when there can be no mistake. Each fall throw well-rotted stable manure around the roots of each plant, and fork it into the ground as early in the spring as the weather permits. At the same time run the plough between the rows, to destroy the undesirable root shoots. Blackberries do not form root beds that send up new shoots, so the ploughing need not be practised between the rows; otherwise, clearing and pruning are virtually the same as for raspberries.

When more plants are required of the raspberry family, allow some of the root shoots to develop during the summer, and early the following spring take them up with a sharp spade, which will sever the connection between the new and the old plant without injury to either. As blackberries do not throw up new plants in the same way, they must be created from seeds or layers. Allow one or two canes of old plants to grow long enough to fall over and reach the ground, and in August peg the tops to the ground with a forked stick, and draw up a little mould around each. They will soon throw out roots and top growth, and early the following spring can be cut from the parent branch about eight inches above the rooted end. Dig up a new plant, and set in rows the same as raspberries. All the brambles are very vigorous growers and remarkably free from disease, but it is advisable to keep a lookout for the anthracnose, which is a greyish-looking spot with a purple centre. They are most likely to make their appearance in summer on young canes, and if not checked, multiply and eventually kill the plants. Cut out any affected canes immediately after discovery, and burn. Spray the adjacent plants with Bordeaux mixture two or three times, allowing twelve or fifteen days between the applications. If old plants are affected, they don't need any

consideration—take shoots from them. Orange-rust is the yellowish-looking spot on the under side of the leaves. The only remedy is to dig up, and cremate, but I truly think, instead of talking about cause and cure of occasional diseases, it is better to set out new plants every five or six years, for fresh-grown youthful vigour invariably militates disease more than any amount of doctoring.

Currants, both black and red, should be in every small-fruit orchard; or if there is no special orchard, a few bushes should be planted in the vegetable garden. Bushes should stand five feet apart, in a partly shady position if possible, and in rich, moist soil. Currant bushes bear for many years if properly cared for, and in their case pruning need not be an annual occurrence, as the same branches will bear for several years; it is advisable, however, to cut out a few of the older branches every two or three years, and encourage new growth. Early in the spring spray well, and again after the fruit has formed, and yet again late in the summer, for borers. This is the worst and commonest enemy the currant has. It originates from a dark-blue moth with yellow bands across the body, which lays its eggs on the buds of the outer branches. The eggs hatch into small white caterpillars with dark heads. After destroying the appearance of the bush they bore to the centre of the stems, and remain there until the following year. Much disease and many insect pests will be averted if all dead leaves are raked up from under the bushes in the late fall, and burned. Mulch around the bushes in the early winter with stable manure, and fork into the ground the following spring. Stock can be increased either by dividing large bushes, which is really the quickest way, or by taking cuttings. If the latter method is followed—and when there are only young bushes on the premises, it will have to be—take about eight inches off the end of well-developed branches of the same season's growth. Plant them so that all but the top leaf-bud is under ground. They need not be set more than three inches apart, and must be transplanted the following year. August is the best season to take the cuttings, as it gives them time to form roots before frost. In November protect them slightly with a mulch of straw or leaves. They should remain in the nursery bed for a year before being transplanted again to their permanent position.

Gooseberries are usually picked green and used for pies, but when the large-fruited varieties are grown they are delicious raw when ripe. The soil should

be rich, heavy loam well drained. Little pruning is needed for the first two or three years beyond the clipping back of the shoots to develop fruit spurs along the cane, but of course weak or broken branches must be removed.

Propagation is done by suckers and mound layers, though the American varieties grow easily from cuttings. To procure strong mound layers, cut the old bushes back in the late fall or early spring to encourage new shoots to spring up from the roots, and when they are from one to two feet high press them outward from the parent plant, covering the base of the shoot up to about four inches above the root with earth, packing it well down. Then in the fall or following spring sever the shoot from the parent plant and transplant to the permanent home. Let them stand about four feet apart each way.



HOW TO RAISE PERENNIAL PLANTS

THE revival of the old-time hardy garden has become such a craze among fashionable folk that the country woman who desires to add to her income will find growing perennial plants for sale a profitable occupation, provided, remember, that there is a well-to-do community near at hand where she may find a ready market.

Like all occupations which have to do with Nature, it is folly to attempt it unless you have an innate love of the work, for it requires the comprehensive sympathy of a real affinity, as well as technical knowledge, to rear either plants or animals successfully.

The great advantage in raising bedding plants is the small space and capital required. A hundred square feet, and two or three dollars for seeds, will enable anyone to make a beginning, which can easily be worked up into a large business. The correct month for starting perennials from seed is June, but as that necessitates waiting about nine months for any returns, I am sure the beginner will agree with me in thinking it is best to start some in the house or hotbed, for then the varieties which flower the first season can be sold in May or June, and those which don't flower until the second season will be large, strong plants in October, when many people set out hardy plants.

The sashes for hotbeds, glazed and painted ready for use, cost only three dollars and fifty cents each, and the walls of the beds can be made out of any old boards, so they do not add very much to the expense of starting, but if you do not care to undertake anything so professional as this at first, it is quite possible to manage with shallow boxes, if you have a south or southeast window in a room which averages from sixty to sixty-five degrees.

The first consideration is getting good potting mould for the seed-beds or boxes. It must be light and fibrous, a condition best arrived at by shaving off

the under side of grass sods, and mixing with about twice the amount of ordinary garden soil and a little fine sand. But as you are not likely to have a store of sods, and the frozen condition of the ground will make it difficult to get them, you must substitute well-rotted cow manure. Have ordinary garden soil carried into some place warm enough to dissipate all frost, then mix thoroughly with the pulverised manure and sand. Pass through a fine sieve, and it will be ready for use.

Even when the hotbed is used, it is better to have small boxes for the different varieties of seeds, and stand them in the hotbed, instead of sowing the seed directly in the bed itself, for some varieties take longer than others to germinate, and it is a difficult problem to ventilate and water a bed containing a miscellaneous assortment, but when the seeds are in boxes, they can be removed from the bed during the warm part of the day, and the difficulty is militated. Boxes should be about two and a half inches deep, and have a few cracks or holes in the bottom for drainage. Cover the bottom with a layer of coal ashes, then fill to within a quarter of an inch of the top with the potting-mould. Smooth it off evenly, water and stand in a warm place.

Within a few days there will be a crop of weed seedlings. Demolish them, rewater and allow a few days to elapse on the chance of a second crop appearing, after which it will be safe to do the planting. It is a good scheme to use a flour or powdered-sugar shaker for very small seeds, instead of trying to sow them by hand. When seeds are large enough to handle individually, like hollyhocks, push them into the soil with the point of a pencil or a wooden-skewer, half an inch apart in rows one inch apart.

After the seeds have been placed, scatter mould over them. The amount has to be determined by the size of the seeds. The general rule is, twice their own depth; but with the very minute varieties it is better to put no covering at all.

No matter what the depth of covering, the soil must be pressed firmly down with a smooth piece of board, cut to fit inside the box. A desk-blotted or roller is very convenient, and does the work very evenly. Do not be afraid to press down firmly. The seeds must be closely imbedded in the soil, otherwise the air will dry up the first frail sprouts and kill them. After the rolling and pressing, sprinkle with water, then cover with a piece of glass or paper, and stand in the hotbed or window.

Covering the boxes with glass or paper is done to retard evaporation. Seeds must never be allowed to dry out during the time of germination; watering is so likely to disturb the soil around them that it is to be avoided if possible, but if it has to be done, use a very fine rose on the sprinkler, warm water and be very careful.

After the seedlings appear, remove the covering, and when the second leaves have developed, transplant into fresh boxes if you are depending on window culture. If you have a hotbed, they can be set in rows from one to two inches apart, according to the size of the plants.

During the bright warm days the sash of the hotbed should be raised or entirely removed, but be very watchful of the weather. Spring is such a treacherous time of year that the warm mornings may develop into frosty afternoons. Always replace the sash over the hotbed by three o'clock in the afternoon, and cover with mats before dusk. As soon as the ground is in condition for the outside nursery beds, dig and thoroughly cultivate, for the plants which are to be held over for fall sales must be bedded out as soon as all fear of frost is past, and seeds sown for the next year's stock.

The seed-beds in the open ground must be well prepared and made very fine and fibrous. Sow the seeds in rows and transplant as with the house seedlings. Beds must all be kept free from weeds and under good cultivation during the growing season. When severe weather comes in the fall, cover lightly with leaves or soil, and the plants will winter safely and be ready for spring sales the following year. The house-raised seedlings which are to be sold for this year's bedding can go into garden beds, but it is really better to put them into small individual pots, which should be partly submerged in soil or sand. Customers will usually pay a few cents extra for pot-plants.

There is such an endless variety of perennial plants that it is impossible to grow them all; in fact, it would be very foolish to try to do so. Select the best-known and most popular kinds, and have some of different sizes, so that you can make up selections for beds. Hollyhocks, foxgloves, golden glow, monk's-hood all range from three and a half to five feet in height. After them come phlox, larkspur, false dragon's-head, Canterbury bells and bergamot. A step lower are bleeding-heart, columbine, leopard's-bane, asters, sweet-williams and wallflowers. Still lower are Iceland poppies, Japanese

primroses, wake-robin and pansies.

The first year it would add to your profit to grow a few of the annual varieties in the hotbed collection: Hollyhocks, sweet sultans, sweet tobacco, asters, wallflowers, mignonette and salvia. Among the perennials which will flower the first season if seed is sown in boxes or hotbeds, are monk's-hood (which is one of the most charming of the tall blue flowers and comes also in white, and blue-white mixed); larkspur; Chinese bellflower (large bell-shaped flowers of steel blue, white and violet); heliotrope and marshmallows (pink, rose colour, white with crimson spots, and golden yellow with maroon centres)—these are amongst the most valuable of the first-year bloomers, for they flower all through the summer. Three of the most fragrant annuals are sweet tobacco, sweet sultan and mignonette.

Sweet-williams are such old favourites, and are so multicoloured that I have always been thankful that they flowered the first season. Meadow-sweet—or goat's-beard, as it is often called—is white and fragrant. Blanket-flower grows about two feet high, and has most gorgeous flowers, dark velvety brown marked with blotches of crimson. Of course, all the varieties suggested for early house-culture should also be sown in the open ground in June to produce a plentiful supply of strong plants for the following year.



JUNE ROSES



JUNE ROSES

THE first luxury we allowed ourselves on the farm was a collection of roses. We had put aside a sum of money for some necessary repairs, and when they were completed there were six dollars left, which we agreed to spend on the garden. One dollar went for perennial seeds, another for wistaria root. The remaining four were devoted to roses. We sent for an advertised collection of hardy roses, consisting of six two-year-old plants for one dollar and twenty cents, two Crimson Ramblers at fifty cents each and two Dorothy Perkins at fifty cents apiece, a collection for winter forcing, which were only little seedlings, and cost forty cents. Lastly, a two-year-old moss rose was added, which also cost forty cents. Since that time, several two-year-olds of specially desired varieties have been bought, but the purchases made with that four dollars really constituted the stock from which we have populated our own and many other gardens.

The first year the Dorothy Perkins covered about twelve square feet of sidewall, and all but the winter collection and one of the others flowered the first season. One hundred slips were taken, and eighty-two lived. Twenty were sold the following season at ten cents each. The second year one hundred were sold at five cents each to a local store, and three dozen at ten cents to odd customers. The winter collection was not allowed to flower until the second winter; then they were put into the violet-house, where they did quite well, but as we had neither time nor desire to undertake any more hothouse work, we never made any attempt to increase the stock or make any sales. However, rose-growing for the winter market is carried on quite extensively in our vicinity, so I have had ample proof of the profit to be derived from the work when undertaken as a business. But truly, I think growing garden plants is almost as profitable, and most certainly it is a much easier and healthier branch of the work. Moreover, it does not require capital, nor the knowledge required for hothouse culture.

The best soil for roses is that which is rich in vegetable matter, such as sod,

roots and fallen leaves which have been exposed to the action of the elements long enough to disintegrate and melt into the soil. It is the condition found in the ground cover of woods and forests, and it can be simulated at home by means of a compost heap. Old sods, leaves and all waste vegetable matter are piled up with alternate layers of garden soil, allowed to remain for several months, then thoroughly forked and repled. When it is wanted for use, pass through a coarse sieve, and mix with one-half its own bulk of cow manure.

If your garden soil is not very good, dig large holes two feet square and deep. Then fill up with the home-made compost, or soil from the woods, and old cow manure. When the young plants come from the nursery, unpack and stand the roots in water. If the ground should not be ready, or any other cause compels delay in planting, add rich soil to the water in which the plants are standing, until it is about the consistency of mud, and keep in that condition until the plants can be set in their permanent positions out of doors.

Make a hole in the middle of the filled-in space large enough to permit of the roots being spread out to their full capacity. Never squeeze plants into a small hole, which necessitates the doubling under of roots. This applies to all plants as well as roses. After the roots have been spread out evenly in the hole, scatter soil over them to the depth of two inches; then water copiously, and after the water has been absorbed by the soil, fill up with dry earth and firm down thoroughly.

Watering in the middle of the filling-in operation washes the soil into all the crevices around the rootlets, and insures a supply of moisture around the plants. Putting in the dry earth above it prevents evaporation, so that the roots have valuable food while they are recovering their hold on Mother Earth.

Another point to remember in setting out roots is that an eastern or northern exposure is to be preferred to a southern exposure, as the morning sun is better for them than the strong noon-day glare. Keep the ground as clean and well-cultivated as around tender annuals.

Now we come to the question of food for this gluttonous beauty. Get a strong barrel and stand it on blocks to raise it to about the height of a pail above the ground, then tack the mouth of an ordinary burlap bag securely around the top of the barrel, so that the bottom of the bag falls to within one inch of the

bottom of the barrel. Insert a common tap just above the lowest hoop, then empty two pailfuls of fresh cow-droppings into the bag, and pour water over it until the barrel is full. Let it stand two or three days before using. Dose: Three quarts of the liquid for each plant every two weeks, from the time they show life in the spring until September.

Hybrid teas are the variety best adapted to garden culture. They embrace some of our most beautiful roses, are perfectly hardy and flower throughout the summer. To this class belong all the Killarney and Lyon family; La France, Viscountess Folkestone, Mrs. Aaron Ward, Harry Kirk and about one hundred others. In order to insure free flowering none must be allowed to fade on the bush. Keep a close watch, and cut the moment the petals show any sign of withering. Allow long stalks, as it is the most natural way of pruning these plants and insures a supply lasting until frost.

Crimson Ramblers I have discarded entirely, for their blossoming period is short, and their foliage is not attractive. Dorothy Perkins and Hiawatha both grow rapidly and are better in every respect.

Two years ago, I bought one plant of the new German climber, Thousand Beauties, which is rightly named, for it is a mass of blossom, and it is like having twenty plants in one, as it bears flowers of all shades, from white to deep crimson. It was a constant wonder and delight the whole of last summer and made quite as much growth as any of the other climbers, so I really think it is worth a place in any collection.

In the fall, all bushes are given a conservative pruning, by which I mean that only some of the old wood is removed—not all—and that the rampant young growth is cut back to about half its length. After the ground is frozen, a heavy covering of cow manure is put around the plants at a distance of two or three feet, according to the size of the bush, and at Christmas-time, before the really severe weather comes, fallen leaves are spread over that, and a few cedar branches, to prevent their being blown away. In the spring, as soon as the ground can be worked, the manure and leaves are worked into the soil, and any branches which have been winter-killed are cut off.

Our collection has been enlarged entirely through cuttings. I cut off about six inches from the end of branches, close to a bud. These cuttings are allowed to

stand in water for two or three days, then planted in shallow boxes filled with moist, rich soil, and kept in a light, warm cellar, where the temperature averages about fifty degrees. The following year they are planted out into nursery beds until August, when they are set out in their permanent homes. Last summer I transplanted ten straight from the cellar into a garden bed, and by July they were two and a half feet high, and bore from four to seven blossoms each from August to September 15th, when we had a hard, frosty night, which checked all development.

If cuttings are intended for winter forcing, proceed as before until the second spring, then transplant into pots, which should be plunged to the rim in the ground.

About once a week turn the pots around, to prevent any roots which may force their way through the bottom of the pot from getting a hold on the ground. At the same time nip off any flower buds which may appear. Feed well, to promote growth, and about July have the benches in the hothouse filled up with rich soil, to which has been added a goodly percentage of silver sand. Remove the plants from the pots, and set out about fifteen inches apart. Of course, the fire must not be started in the heating apparatus, and all windows and doors must be kept open, so that the plants have plenty of air, and during the hot, close days, they should be lightly sprayed three or four times a day. After the first of September there is danger of frost, so it is best to close the windows at night, but the principal desire is to keep the plants cool to permit their growth until the fires are lighted and forcing really begins, which should be about October. When the fires are first lighted, keep the temperature down to about fifty-five degrees, increase slowly to sixty-five, then to seventy.

Watering is a great problem, and nothing but practice can really teach you the exact proportions. The only general instruction is: The plant must never be allowed to dry out, nor must it ever be too wet. A spray for green fly and other insects should be used in the evening, once or twice a week, from the time the plants are taken from the garden into the house.

LAVENDER AND HERBS

THERE should be an herb bed in every garden, for their usefulness is manifold. Ye dames of olden times knew and estimated their value, but when housewifery was metamorphosed into domestic science, the traditional law of our grandmothers sank into derision, and many factors of homey comfort might forever have been buried in oblivion had not some wise person started a craze for old furniture. That aroused a general interest in the old-time housewifery, and resulted in a revival of half-forgotten arts, the hardy garden and herb bed being among them.

I spent most of my schoolday holidays at my grandmother's place in Yorkshire, England, where many of the customs of Queen Anne's time remain unchanged. So to me lavender and herbs seemed indispensable in a self-respecting household, and as soon as I owned a garden they were installed. Perhaps you never experienced the delight of sleeping between sheets redolent of sweet herbs, so don't know what you are missing. At grandmother's, sheer muslin bags were filled with lavender, thyme and rosemary, and kept in every cupboard, bureau drawer and chest. Large jars filled with rose-leaves and mignonette, all the herbs and many spices were stowed in the sitting-rooms and halls, and the lids were removed for about half an hour after sweeping and dusting were completed, so a faint, indescribable perfume permeated the whole house, and was most delightful. Punk sticks and pastils have such a positive odour that after a time one becomes very tired of them, but herbal odours, being delicate and indescribable, merely suggest the freshness of meadow lands in June, and invigorate the senses instead of wearying.

The herb then is invaluable for all sorts of complexion and hair washes. Even Helen of Troy's beauty was attributed to their use. As disinfectants—well, the plague was supposed to be banished from Athens by the air being purified with aromatic herbs, and during the great plague in England in Elizabeth's time, little balls of perfume paste encased in silver, gold or ivory, open-

worked locket or pomades were worn suspended round the neck or carried in the pockets, and during an outbreak of smallpox, grandmamma brought forth several such inherited treasures and filled them with a compound made of beeswax, herbs and spices, and we all wore them in the old way. What influence they exercised over the dreaded disease I do not pretend to gauge, but we all escaped. Separate or mingled fate and superstition has made me use such compounds whenever travelling or knowingly exposed to infection. Even medical men don't deny the benefit of sweet odours, or their value as disinfectants, so why should not we enjoy the undoubted pleasure when it only means a few packages of seeds and a little trouble.

Lavender is hardy when it is once firmly established, but it is not the easiest perennial to start in this country. At first I bought nursery stock, but out of two dozen plants which I got from four different sources during two years, only one lived, and that was always a semi-invalid, so I resorted to the slower method of sowing seed. In March, a shallow box was filled with potting mould thoroughly soaked with water, then covered with about one-fourth of an inch of soil, patted down firmly, the box covered with glass, and placed in a west window. As soon as seedlings appeared the glass was removed, but they were shaded from the direct sun and slightly sprinkled every morning. When two inches high they were transplanted to a deeper box and set two inches apart. About two months later they were transplanted to a partly-shaded seed-bed in the garden, and the last two leaves were nipped off each plant to insure a bushy growth. Cultivation was constant all through the summer until August, when they were again transplanted—this time into a bed which was to be their permanent home—a border partly shaded by shrubs. It happened to be a very dry summer, so they were sprinkled every evening. When cool weather set in, leaves were scattered between the plants, and the quantity increased as the weather became more severe. In the spring the mulch was removed, and a little bone meal raked into the ground around the plants. The ground must be covered every winter, and it is well to have a dressing of well-rotted cow manure dug into the bed during the early fall.

In June or July we always have huge quantities of flowers. We have never marketed any of them, but they have formed the basis of many Christmas and birthday presents. Ten pounds of lavender flowers, and one pound each of musk, thyme, rosemary and mint leaves, all dried, and mixed with one ounce

of ground cloves, was grandmamma's formula for moth-bags which preserved our furs and woollens just as effectually as camphor balls or tar mixtures.

Sage is needed for pork, duck and goose dressings, and is one of the very best tonics for the hair: the broad leaf variety is the best to grow. It will save time to buy the plants; they only cost ten cents each, are very easy to establish, and quite hardy. Three plants will be sufficient for a home supply. Set out three feet apart in a partly shaded situation. There are two varieties of thyme; both should find a place in the garden, the broad leaf English in the herb-bed for flavoring stews and soups; the almond-scented in the flower garden, for it is a pretty variegated plant which remains green all through the year, and is used only for sachets and potpourri. Both varieties are perennials, but if sown early in the spring will mature the first season. The seed should be sown in rows nine inches apart, on rich soil which has been worked into a fine, loose condition, with a fine garden rake, and later smoothed off with a board or the back of a spade. Mark the rows by pressing the edge of a board on to the ground. Don't make a furrow, as the seed is very small. Next, sprinkle thoroughly, using a fine rose on the water-can. Keep the can moving back and forth until the ground is thoroughly saturated to the depth of an inch. Wait for an hour, then scatter the seed thinly on the marked lines, and cover about the sixteenth of an inch with dry, fine soil. It is a good plan to fill the flour-dredger with soil, and shake it over the rows, for then you are sure of its being evenly distributed. After the seed is covered, put a board over the row, and press gently, to insure the seeds being firmed into the ground.

Thyme, marjoram—in fact, all small seeds—do better if they are partly shaded. I make long, narrow frames of slats, and cover them with unbleached muslin, then drive a few sticks into each side of the row, and lay the frames over them. For safety against wind-storms, it is well to put a few nails through the frames into the sticks. About eleven o'clock it is advisable to sprinkle the muslin over the frames with water, as the evaporation prevents the seedlings becoming too dry. If time won't permit making the frames, spread two or three thicknesses over the rows, using stones to hold them in place, or mulch with lawn clippings. I like the former the best, because they are easy to remove, and are not so untidy as a grass mulch, which dries and blows about.

When the seedlings are well established—which is when they have got their second pair of leaves and are an inch high—the mulch will have to be removed, but if the frames are used, they can remain for another week.

Rosemary is another perennial, and the plants can easily be got from any nursery, but if you want to raise some seed, proceed exactly as for thyme. After you have one well-grown plant, it is better to propagate by cutting than to raise from seed. They require rich soil, and a sunny position, and need some light protection during the winter. The whole plant is aromatic, but the flowers are the strongest. It is the essential oil which is distilled from them that is the principal ingredient of eau de cologne. A cupful each of lavender, thyme, rosemary and mint, steeped in two quarts of hot water for two hours, strained and added to a warm bath, banishes fatigue in a miraculous way, and in cases of long convalescence, a cupful of the mixture in the sponge bath is most gratifying and refreshing to the invalid.

Summer savory is an annual. It must be sown in shallow drills nine inches apart, in early summer. Sweet marjoram is a perennial, and should receive the same culture as lavender. Both are used for flavouring, stuffings and soups. Bane, saffron and wormwood belong to the poultry department principally. The first are annuals, the last perennial. Borage is an annual which gives just the piquant fillip to salads and summer drinks which epicures delight in, and bees simply adore it. Plant in dry, sandy soil. Dill and tarragon must not be left out of the herb collection, for they improve the pickles, and are necessary for many sauces. They are both annuals of easy culture, and will grow in any garden. Sow in rows ten inches apart, and thin when plants get second leaves. To make tarragon vinegar, gather a pint of the young sprigs, wash, and pour two quarts of malt vinegar over them. Let it stand two or three weeks, strain, and if not quite strong enough, add fresh sprigs. Strain after two weeks, and bottle for use.

Spearmint requires moist soil. We grow it in large quantities, as we have a good market for it at five cents a bunch during the spring and summer. It is positively no trouble after it is introduced into congenial soil, for it spreads rapidly, and needs no cultivation beyond the cutting what is necessary for market.

Don't make the mistake of transplanting the common wild mint, for usually

the flavour is more like peppermint than spearmint, which is the variety demanded for sauces. We bought three plants originally, which cost fifteen cents each, and now it covers about fifty feet of one side of the back garden, where the ground is moist and shaded by some old quince trees.



GROWING WATERCRESS

WATERCRESS is in constant demand the year round in the markets of all large cities, so it is a salable crop which should especially appeal to the commuter class of farmers, as it must be freshly gathered to be at its best, and naturally cannot be shipped long distances to market, which is perhaps the principal reason for its being such a profitable crop. In France and England, watercress farms are quite numerous, especially in the vicinity of Paris and London; but in this country it is only just beginning to be cultivated to any great extent, the principal market supply being furnished by Italians who take short journeys into the country and gather it from the ponds and streams where it grows wild. Under such circumstances it is not surprising that the leaves of poisonous water plants are often found in bunches offered for sale in the public markets. We have supplied our egg customers and one hotel with cress for four years, and never received less than five cents a bunch—usually ten cents—and from November to March from twelve to fifteen cents for a good-sized bunch.

Like a good many of the side lines which have brought grist to our mill, it developed from an apparent accident. There was a large wild bed in the stream which ran through the lower meadows, from which we gathered cress during the spring and summer. Chancing down a wagon-road one day in January, we were astonished to see lots of fresh green sprigs growing under the meagre shelter of a low log bridge which crossed the brook. We accepted the hint, and determined to protect enough of the brook the following year to supply us with fresh salad through the winter. Some time in October, brush was piled up for a distance of about six feet on each side of the stream. In November, when the nights commenced to be really cold, we made some frames out of thin cedar poles, interlaced them with strong cedar branches, and then placed them over the stream, with the ends resting on the brush, which elevated them about nine inches above the cress. Though primitive, the arrangement proved beyond doubt that forcing watercress was practicable.

During that winter we often put a little cress around the poultry which was being shipped to private customers, and so many requests came for a regular supply that we concluded it would pay to increase the beds. But as the stream was some distance from the house, and accessible to the cows when they were in the lower pasture, we resolved to utilize the escape from the spring-house, which was never failing. It had up to that time been carried off by a tile-drain under the side lawn. Operations were commenced by digging a ditch three feet wide, one foot deep. At first it was only made fifty feet long; subsequently it was increased to one hundred feet. As the ground was heavy clay, we carted clean sand from a bank at the other end of the farm, and covered the bottom of the ditch to the depth of three inches to form a seed-bed, and also to militate the usual creepy-crawly brook creatures.

At every five feet of the ditch, sluices were inserted—just box-like arrangements, made out of rough boards, one of which could be raised and lowered at will, so that the amount of water in each five-foot section would be under control. When the ditch and sluices were completed, a trap divided through the middle was put in front of the escape from the spring-house to divide the flow of water, and one length of the tile at each end of the trap carried it to the opposite sides of the ditch to insure even distribution.

It is a special stone building, twelve feet square, used for milk and butter. The floor is about three feet below the ground, and a gutter, fourteen inches wide and twelve inches deep, runs all round the four sides, and is kept continually full of cold running water from a spring situated about three feet to the right of the house. The water is divided by a stone as it enters the house, and goes to the right or left in the gutter until it reaches the escape at the opposite side of the house. The floor and gutter are made of stone, so the place is beautifully clean and very like an old-country dairy.

After the beds had been thoroughly saturated with water, all but the merest dribble was shut off. Roots from the meadow brook were taken up, washed carefully in fresh water to remove the before-mentioned creepy creatures, and then set out in the sand at the bottom of the ditch. Field stones were placed on the roots of each plant to prevent their being dislodged by the action of the water before they had had time to establish an anchorage. After two weeks the whole supply of water was allowed to run into the ditch, and it covered

the bottom to a depth of five inches.

Fully one-half the plants died and had to be replanted, but the following year the entire ditch was a solid mass of cress. The leaves were much larger, and the flavour much better, than the cress had ever been in its wild state. Of course, if the best price was to be obtained in the winter, our desire was to force the crop at that season. We built sides fifteen inches deep to the ditch, using rough slabs, which only cost us fifty cents a load from the sawmill in the woods. Then we used the ordinary cold-frame sash over the top.

After the beds are once established, their cultivation consists in cutting, and nothing else; and, as the cutting is necessary for the market supply, it is really truer to call it harvesting than cultivating; though neglecting to cut the beds regularly as soon as they are four inches high will ruin a bed very rapidly, as the plants grow thick-stemmed and sprawly.

We find that old beds as a rule are not as profitable as young ones, so we make a practice of renewing three or four sections every year. The method is to withhold water in July until the plants die, then pull them up, after which the bottom of the ditch is dug over to let in the air and sweeten the ground. After a lapse of two or three days, it is raked down level again, and a few loads of fresh sand spread over the bottom, saturated with water as before, though, instead of old roots, we now use slips three inches long, taken from the ends of old branching plants. They root very quickly, and make better plants than the old roots.

Twice we have started an entirely new stock from the seed, and think the result quite worthy of the extra trouble. The seed is very light and small, so it is best to start it in shallow pans filled with sand, which must, of course, be kept saturated with water, but not submerged.

May or June is the best season for this planting, for then plants are large enough to transplant into beds in July, and will be well established before the forcing season.

For a small home supply through the winter, half-barrels or wash-tubs may be used. Half fill them with sandy soil and stand in a light, warm cellar. Set slips four inches apart in August, and keep perpetually moist. If you have no

means of getting slips, buy seed from any good seedsman. Start in shallow pans in June.

I saw an item in a paper, not long ago, which estimated that an acre of watercress, at its present market prices, would bring from four to five hundred dollars a year.

Watercress should be carefully prepared for market. Gather and bunch at once, to prevent unnecessary handling. Cut the stalks evenly after the bunches are tied up, and pack in light crates lined with hay or moss. Place bunches closely together in rows, with hay or moss between layers. Ship on late trains if they have to go by express, to avoid exposure to the heat of the sun during transit. When small quantities are going to private customers, pack in strawberry or grape boxes, as there is less likelihood of the cress heating and spoiling when packed in this way.



MY EXPERIENCE WITH BEES

THE old-fashioned hive was so inconvenient and wasteful that many people who date their knowledge of bee-keeping from the old homestead will find it difficult to believe that apiculture has developed into a practical, money-making industry during the last twenty years, until now the average amount of honey put on the market each year is upward of a hundred million pounds, representing a money value of from eight to ten million dollars.

In a favourable locality one hive, with its average colony of thirty-five thousand workers and a queen, will turn out from thirty to forty pounds, besides the fifteen or twenty necessary to feed the hive through the winter.

The vicious temper of the old-time black bee has much to do with the neglect of this profitable industry. The Italian bees are, however, so much better as honey-gatherers that they are almost universally kept now, and are so gentle in disposition that even a nervous person can easily learn to manipulate them without fear of stings.

The principal honey-producing plants in our Eastern states are fruit bloom of all kinds, locust, white clover, crimson clover, basswood, sumac, goldenrod, buckwheat, sunflowers, grapes and asters. Of these, clover, basswood and buckwheat provide the bulk of our honey crop in most localities, although large yields are often obtained from others. Fruit bloom, though yielding much honey, comes so early in the season that it is mostly consumed by the bees in brood-rearing. Clover commences the last of May, lasts several weeks, and yields a light-coloured honey of fine flavour. Basswood blooms the first part of July, lasts about ten days, and produces a very white honey. Buckwheat blooms in August and the first part of September. It gives a dark-red honey with a strong flavour.

My apiary started with three hives, bought for two dollars at a farm auction. I knew nothing about bees or hives at the time; the owner was not there to be

questioned, so it was a truly risky proceeding, not to be recommended. But if chance makes it possible to pick up one or two good hives of the box, movable-frame style, and bees of any sort for a few dollars, take them and improve the stock by introducing good Italian queens, which can be bought for two dollars and fifty cents each from any bee-supply house. They can be shipped through the mail in small cages.

When an Italian queen is introduced into a hive of common bees in May or June there will be no sign of the original occupants in the fall. For the working bees are such indefatigable toilers that during blossom-time they usually wear themselves out in about six weeks, and most certainly never survive more than twelve. The drones are driven from the hive to die whenever any of the different blossom crops which supply honey are on the decline. Queens live for years, but as perpetuators of their race are only to be relied upon for three years.

If your immediate neighbourhood cannot furnish stock to start with, the best plan is to send for frames of nuclei and a queen. One frame would cost three dollars, and hardly contains sufficient bees to build up a strong colony, therefore it is better to send for three frames, which will make a splendid start, and only cost an additional one dollar and fifty cents. If purchased in June or July they will have multiplied so considerably by the time buckwheat is in blossom that you will be able to build up a second colony. Of course, a hive filled with a full complement of bees can be bought, but would cost at least ten dollars. Express charges would be very expensive, as bees come under the head of live creatures, and double rates must be paid. The frames of nuclei are packed in light cases which cost less than half.

A hive must be ready to receive the little travellers on their arrival, and here again it is advisable to consider express charges. One hive ready for use will cost two dollars and sixty cents, and almost as much expressage as five hives “in the flat,” as dealers call it, and the five hives can be had for nine dollars and twenty-five cents. Nails of the correct size and full instructions are sent with the hive, so even a feminine amateur will find it quite easy to put them together. I use two-story, dovetailed hives, which consist of a cover, bottom, brood-chamber and two supers. Bees are best kept in a quiet corner of the garden, or under the trees in the orchard, where they are protected from the

noon-day sun and east winds. When we had only two or three hives they stood on a shelf in an open-fronted shelter, which was made from a large packing-case bought from the general store for twenty cents. In the winter we packed straw or leaves around the hives, and set up boards in front, which leaned against the top of the case, and sloped out a few inches at the ground. This was to keep out the snow and rain and yet allow plenty of ventilation. Now that hives are scattered through the orchard, we simply slip each into a case a little larger than itself, and set up a board in front. Further south no protection will be required, but in the North it would be advisable to carry the hives into a dry, well-ventilated cellar for the winter. The only drawback to the latter plan is that the bees may become restless quite early in the spring, so the condition of hives should be watched.

A small hand-mirror held at the opening of the hive, and a light held in the other hand so that it will shine into the hive, will enable you to see what is going on inside. If the bees appear restless, it is a sure sign that they need more air. Opening the cellar windows after dark on a moderate night will usually supply all the ventilation that is necessary, until the middle or end of March, when it is best to let the bees have a cleansing flight if they still appear restless. It is not very much trouble, when only a few hives are kept, to carry them out on a warm day and place them where they stood last fall. It should be done early in the morning and as carefully as possible, so as not to disturb the inmates, who will gradually arouse as the sun gains strength, and take flight. This will relieve the intestines of the waste matter which has caused their restlessness. After the sun has gone down in the evening, carry the hives back into the cellar, and the bees will be quiet until spring is sufficiently advanced to warrant putting them out for the season, which is usually when soft maples and willows commence to furnish pollen.

As soon as the days are warm in spring we go through the hives and give them a general clean-up. If a hive appears to be short of honey, a comb from a hive that is well supplied is removed and given to it, and as some bees are sure to have died during the winter, some colonies will be stronger than others, so things must be evened up. When a hive has more than five frames filled with brood, one or two are taken out and placed in hives having less than five frames filled with brood. A great advantage of the modern frame-hive is this being able to take out and put in brood, and later add supers and

empty sections as the original ones are filled with honey.

A bee's life is apparently a most accurately prearranged existence, filled with allotted duties, which are intuitively understood and unerringly performed. There is only one queen allowed in each colony, and she lays all the eggs, the workers being imperfectly-developed females. Drones are the masculine members of the population, lazy fellows, whom the workers have to feed, hence the reason for their being expelled from the hive whenever food is scarce.

The queen is truly a royal personage, who only leaves the hive to take what is called the nuptial flight, when she meets some drone in midair, and returns to become the sole mother of the hive. She is always guarded by a small retinue of attendants, who feed and care for her as she wanders from cell to cell, depositing an egg in each with untiring zeal. The egg develops into a tiny grub-like worm, which is fed for seven days by young workers; then the cell is capped over by another set of workers, the grub being left undisturbed for eleven or twelve days, by which time it has developed into a full-fledged bee, which gnaws its way out of the cell, and at once takes up the duties of life. For six or seven days its time is devoted to feeding the newly-hatched eggs, then, for about the same length of time, building combs and cleaning the hives, after which it is evidently considered strong enough to leave the hive and commence the arduous task of gathering honey. The queen is exempt from all work.

Within a week or two after a virgin queen has taken her nuptial flight, the hive should be opened and the frames removed, one by one, and examined until the queen is found. She can be distinguished from the others by the length of her body and the way the other bees cluster around her. Pick her up very gently by the back, being careful not to squeeze her abdomen, and with a pair of sharp scissors clip both wings on one side of her body. This insures a short flight at swarming-time. When she again issues from the hive, usually the excited condition of the bees will indicate when this is going to take place, and as the queen cannot fly with her cut wings, you will have little trouble, for she will be found on the ground near the hive, with a group of bees around her, and the full swarm not far away. Approach very quietly, and place a small wire trap over the queen. The traps are sold by all the bee-

supply firms, and cost twenty-five cents. Place the trap in the opening of the hive you desire the swarm to occupy, cautiously approach the full swarm, and with a soft broom sweep the bees into the hive if the position they occupy makes it possible; if not, use a box or pan, and carry them to the hive and empty them in front. They will soon commence to occupy the new home. The slide of the queen trap can be opened, and the bees inside will settle down to business.

After the first swarm, early in the season, it is advisable to take every possible means to prevent after-swarms. Want of room is the main cause for old bees leaving a hive, so a great deal may be accomplished by careful manipulation of the frames. The lower part of the hive is devoted to brood-rearing; the other part is composed of the frames which hold the section-boxes. Section-boxes are the small square cases in which comb-honey is marketed.

Among the modern inventions in apiculture is the comb foundation, or starter, as it is sometimes called. In the old days bees had to supply all the wax to build the combs. Now it is bought with the cells ready started, and the bees have only to draw them out and finish off the work, which of course saves the little workers much time, and enables them to store more honey. What is termed medium foundation is used in the brood-frames, and thin or extra thin in the section-boxes. Bees will sometimes ignore extra space when added above the frames where they have been working, so it is advisable to raise the top super, and insert another one below it. This supplying empty sections materially mitigates swarming, but does not always prevent it. It is the after-swarms that it is so important to check, as they are of little use, seldom being able to gather sufficient stores to keep them through the winter. In September all hives should be examined, and if any have less than twenty-five pounds of honey, artificial feeding must be resorted to. Make a syrup of equal quantities of sugar and water; heat slowly, stirring all the time, being very careful not to let it scorch, for burnt syrup means destruction to the bees. Allow it to cool, and then fill what is known as a Miller feeder, which costs thirty-five cents, and fits into any of the movable-frame hives.



A CELLAR STORE ROOM



STORING FRUIT AND VEGETABLES

AT least one-half of the profit to be derived from living in the country materialises in winter when fruit and vegetables can be struck from the family living expenses, so the keeping and storing of the garden and orchard products are of great importance to the housewife who wants to make the home furnish current expenses. To keep well, things must be gathered at the moment between full development and complete ripeness, for, if development is not complete, fruit and vegetables shrink and wither; if completely ripe, they decay rapidly.

The house cellar, attic, or a root-cellar or pit in the garden are all available on a country place, and all suitable for different things. The cellar is best for storing fruits and vegetables. Long ago we had racks made of two-by-two scantling—some six feet long, others three feet, and both two feet wide—to put under barrels and boxes to lift them from the ground and allow a free current of air to circulate underneath them as a protection against damp and mildew. To economise space, we had boxes, ten feet long and ten inches deep, fixed in tiers of three, with one foot of space between. The frames which supported them were also made of two-by-two scantling, and reached from the rafters of the ceiling to the ground.

The keeping of early fruits, like currants, strawberries, and raspberries, depends principally upon the cook's skill, for they have to be canned and made into preserves and jellies. Get into the habit of doing such work in small quantities—from a quart to six quarts, or even a pint, as the day's gathering may provide. The habit of waiting for the height of the season, when a big gathering is possible, is frequently the cause of home-canned goods spoiling, because some of the fruit is almost sure to be overripe, and that means that fermentation or mould will set in, in a short time, and ruin the entire boiling.

After wiping and labelling the jars, they must be kept in a cool, dark place.

We have a big cupboard at the back of the outside section of the cellar, where all such goods are kept. Begin with asparagus, which is best packed into jars filled with salt and water, and cooked in a steam boiler for an hour and a half. Peas are shelled, and about two quarts of the hulls and a sprig of mint are boiled in four quarts of water for thirty minutes, then strained, the water brought to the boiling-point, salted to taste, and the peas boiled slowly in it for thirty minutes. Fill the jars to overflowing, and screw down the tops at once. Beans must be strung and sliced and boiled in salted water, as for table, or packed in two-inch layers, with a sprinkling of salt between, in a stone crock. Put a plate or a stone on top of the beans to keep them under the brine, and cover closely. When wanted for use, soak in fresh cold water overnight and cook in the usual way.

Gathering and packing is of the greatest importance in keeping fruit. The most favourable time is when the fruit has attained its full growth and colour, which is several days before it is quite ripe. All fruit should be handled with the greatest care; the slightest bruise or scratch starts a condition which will develop rot. A high extension ladder, a high step-ladder, and an agile boy are the requisites for picking. When possible, choose a bright, cool day, have the boxes and barrels ready, and press all help into service. Before allowing anyone to pick apples, teach him how. Take the apple lightly, turn it slowly, and press upward, so that the stem is severed from the branch, not from fruit.

Whoever does the climbing should discard shoes, for they are apt to injure the bark of the tree, which always causes later troubles. A shallow bag, slung across the body sling-fashion, is the best receptacle for the picker to use, because it leaves both hands free. The work is greatly facilitated if two people can pick, two pack, and a fifth take the fruit from the pickers to the packers. Have two bag-slugs for each person picking, so that the collector can take the full one and hand up an empty one, which saves emptying the fruit into a basket.

The packers and the barrels, or boxes, should stand side by side, with a box of convenient height and size turned upside down to act as a table on which to place the sling-bags when full. The best apples are packed in small boxes, with paper between the layers. The second quality are put into barrels. Put a layer of hay in the bottom of the barrel, fill it with the fruit, and end with a

layer of hay. The small ones may be used for cider and for feeding stock.

Onions are ready to harvest when the tops fall down and dry. Choose a dry day to dig them up. Leave the bulbs lying on the ground for several days, then carry into a shed, where they can be spread out for two or three days more, while the work of cutting off the roots and tops is being completed. We have a room over the woodshed which we use for onions, as they are apt to sprout in a cellar that is moist enough to keep other root-crops in good condition. We had tiers of shelves, made of slats, put up all round the walls, on which the onions are spread out, and, as a precaution against frost, they are covered with bags or dry autumn leaves as severe weather approaches. Bore holes about nine inches apart in the sides of the barrels; fill with the onions, leaving the head of the barrel off, and stand in any unused room.

Potatoes should be dug as soon as the tops die down. Choose a dry, bright day and cart at once into a dark place to dry. Don't leave them in the light on the field, but spread out for a few days, then pack them in the cellar in barrels which have a few holes bored in them, or in bins which have a bottom made of slats.

Carrots, turnips and beets should be packed in boxes or on tiers of box shelves. In either case, they should be well covered with sand or soil to prevent the roots shrivelling. Put a few boards in a sunny place, and stand the squash and pumpkins on them. They should stay there about a week or ten days, and be covered at night with bags or an old blanket, after which put them in some dry, cool place.

Cauliflowers are pulled up with as much soil as may be attached to the roots, and hung head down from ceiling of the cellar; Brussels sprouts, the same. Cabbage is pulled up in the same way and packed in rows of two or three abreast on the cellar floor. These are for use in very bad weather. The main quantity is stacked in a pit in the garden and covered with earth, straw and brush.

Celery is partly protected by being earthed up for bleaching, so it can be left in the garden until the first of October, or even the fifteenth if mild, but it must be brought in before heavy frost. About nine inches of soil is spread on the floor all along one side of the cellar. The celery is dug and brought in

with what earth adheres to the roots, and then set in the soil just as if the plants were expected to grow, only they are put very close together and about three abreast. When the row is completed, boards are set upon end, the full length of the row, and another set of heads is packed in the same way, each additional row being divided by boards. This is done to prevent the celery heating, and rot setting in, as would be the case if the entire mass was allowed to touch. After the setting-up is all done, earth is scattered heavily between the heads.

There is usually a large quantity of green tomatoes still on the vines in the fall, and the full-sized ones can be packed in shallow boxes, with paper between the layers, and kept in a cool, dark place. Later in the season bring out a few at a time to ripen in the window of a warm room.

Grapes must be carefully cut, the bunches examined and any faulty grapes removed with a pair of scissors. Put slats across a box about two inches from the top, tying the bunches of grapes to the slats and letting them hang down into the box, leaving a space between the bunches. Fill the box up with finely-cut tissue-paper and keep on the shelf in the cellar.

The cellar for storing fruit must be well ventilated and free from damp, though a cement cellar is apt to be too dry, which causes the fruit to shrivel. In such a case, stand a tub or a couple of pails of water in the cellar, and do not fail to change it once or twice a month. A dry cellar with an earthen floor is usually about right, though, if rapid thaws occur during the early spring, such a floor is likely to become very damp; as a remedy, put one or two wide, shallow boxes, filled with unslaked lime, into the cellar, which will absorb the moisture.



FORCING RHUBARB AND ASPARAGUS

WE had little more than settled on the farm when I read an article in some farm paper about forcing rhubarb in a dark cellar. There was a lot of rhubarb in the garden, and a lot of room in the cellar. Several roots were dug up and packed in one corner of the section we kept for vegetables, but as the article had not mentioned that any heat was necessary, and that it was necessary to expel all light, the venture was not a success, for there was a window in the wall near the chosen corner, which allowed the light to shine right on the roots, and the temperature was much too cold. There were dozens of spindly little stalks, with large green leaves at their ends, but nothing worthy the name of pie-plant.

However, before the following winter I had secured technical knowledge and vicarious experience, to start on. The window was boarded up, and two lanterns were kept burning near the roots. We had rhubarb charlotte and rhubarb pies, and stewed rhubarb for breakfast, just as often as we liked, from December until March, and what is more to the purpose, we sold eighty-two dollars' worth.

After we built the mushroom-cellar, a section was partitioned off for rhubarb and asparagus, and both became profitable adjuncts to our winter income. One great advantage about both of these crops for home use is that there is no necessity to use manure or any great amount of moisture, and for that reason there is no objectionable odour to sift through into the living-rooms.

Naturally, when large quantities are to be raised for market, it is better to have a special room for work, but even that does not necessitate any serious outlay. A neighbour built a house twenty-eight feet long on the dugout plan, on a side-hill at the back of his house; just boarded up the front and ends with rough slabs, which cost him two dollars and fifty cents. Three rolls of tar-paper, at one dollar and ten cents each, were used to exclude light and draft. Stove-pipe cost another two dollars. He had an old stove, but even if he had

had to buy one, it would only have meant another eight or ten dollars, and the first crop brought him in one hundred and thirty dollars.

There is often some old building around a farm which can be utilised for this work, but if there is no hillside or building available, it is better to excavate to a depth of three feet, making the house about nine feet wide and as long as you like. This will allow a two-foot path through the middle, and a little more than three feet on each side, in which to store the roots. Side-walls need be only a foot above the ground, but it is best to have a peaked roof, the centre of which is three and a half feet above ground, so that there will be plenty of headroom in the centre of the house.

Place a door at one end, with an extension shed and storm door beyond it, unless the house can be built adjoining some shed or outbuilding into which the door may open. Cover the ends and roof with tar-paper, and bank the sides up with earth. Then in the centre of the house make a pit, about two feet below the floor and large enough for a stove to stand in, and run the pipe from a double elbow to each end of the house.

The reason for making the pit for the stove to stand in is to get the pipe as near the ground as possible. It is possible to do without the stove if the floor of the house is covered with manure and a goodly supply is packed around the sides of the house, but as that would be more expensive and much more laborious, I advise you to adopt the stove plan, especially as it involves none of the harrowing niceties usually attached to running hothouse heating apparatus, there being no water-pipes to freeze or injury to crops if the fire happens to run down or even go out altogether. My neighbour, who built the house on the side hill, tells me that he had no coal-stove at first, and used the kerosene cooking-stove from his summer kitchen.

Having decided where and what quantity is to be raised next winter, the preliminary work must be begun at once. If you have a lot of old roots in the garden, dig up the greater number just as soon as it is possible to put a spade in the ground, and cut the roots into good-sized chunks, being careful to leave from two to four eyes (embryo buds, which are unmistakable) in each clump.

If you have a strip of ground on which corn or potatoes were grown last year, scatter barn-yard manure over it. If it is heavy loam, plough deeply, but if

light sandy soil, the furrows need not be more than six inches deep, and in addition to the barn-yard fertiliser it will be well to use a heavy dressing of wood ashes. We spread the barn-yard manure about three inches deep all over the surface of the ground before ploughing, then broadcast ashes, harrowing up and down, leave for about two weeks, and then harrow from side to side.

When in good condition, the ground must be marked off into rows about four feet apart. Run the plough twice in the same furrow, and the trench will be deep enough to admit of a little more manure being scattered, then covered lightly with soil before the plants are put in. Set them three feet apart. Cultivate well through the summer to keep clean and promote growth.

Cut out any flower-stalks which may appear, for one flower-stalk takes more strength from the root than twenty fruit-stalks, so they should never be allowed to mature, even in the ordinary garden-beds.

The clumps left undisturbed for the summer supply should have a good dressing of manure worked into the ground around them now and again after the gathering season is over, so that they will be in good condition to go into the cellar in December.

When old clumps have been divided and set out in April, they will be large and strong enough to use for forcing the following December, but if young nursery plants have to be bought, it is better to defer forcing until the second winter.

About November 15th we dig up the roots and leave them to be frozen; then about December 1st, or even a little earlier if the nights have been frosty, one-half the roots are piled up in a shed, and the other half packed on the earth floor of the forcing-house. A little earth is scattered between them, and then they are sprinkled with water in which nitrate of soda has been dissolved, one ounce of the latter to one gallon of water.

The stove is started, a wash-boiler of water put on, and then the work simply consists of shaking down the stove, putting on half a scuttle of coal and filling up the boiler night and morning.

In from three to four weeks the first gathering is made. Stalks should be from

twelve to fourteen inches high, and four usually go to a bunch. The roots will yield good crops for from three to four weeks, but gathering should cease when the crop shows any sign of declining.

When you decide that the roots shall stop bearing, let the fire go out. Three or four days later the roots can be removed and piled in a shed, and those that have been held dormant brought in and spread on the cellar floor. Proceed as with the first lot, and at the end of the season simply let out the fire again and wait until the weather will permit outside planting. Then divide the roots into two or three pieces, according to size, and plant in rows as before. They will be ready for forcing again the second winter, so that, once started, the supply is always on the increase.

Asparagus can also be forced in the same manner as rhubarb, the only difference being that asparagus roots don't divide well, so seed has to be sown each year to keep up a stock for forcing. Plants cannot be used until the third season, and they are not supposed to be worth replanting for forcing.

Asparagus can also be forced by placing hotbed frames and sashes over the plants, and banking up all around the frames with stable manure, to generate heat. This method only slightly hastens the crop. There is nothing quite as satisfactory or profitable as the dark house or cellar, because growing roots from seed is comparatively little trouble, and the supply once started, it is an easy matter to keep up a succession of three-year-old roots. Time can be saved the first year by buying one- or two-year-old plants from a nursery, planting them in the garden, and the following year use for forcing.



RAISING PIGS

A COUNTRY home large enough to maintain a cow should certainly keep a pig, if things are to be run on a profitable basis, for the skim-milk, buttermilk and waste vegetables cannot be satisfactorily disposed of, unless there is a pig to consume them. Build the sty first. Ours is built on the English plan, a sleeping-compartment six feet square, five feet high in front, three feet at back. Outer compartment of same size, with walls three feet high, floor slanting slightly to the front. There is a trough in each corner of the open compartment. The floor of the sleeping-room is six inches higher than the outer compartment, and the whole building, except the roof, is made of concrete, so can be easily and thoroughly cleansed.

If several sows are to be kept, each must have a sty, and there should be one or two large ones for young stock. The piggery should be as far from the house and water-supply as possible.

If funds have to be very carefully dispensed, start with a pair of young ones, which usually can be bought in any farming district in the spring for about six dollars a pair when six weeks old. They will need a little extra care at first, a warm bed of common hay or dry leaves over straw. It is advisable to watch them at feeding-time to see that they eat. The first week boil a quart of wheat-bran, pounded oatmeal (hulled oats very coarsely ground), coarse corn-meal and white middlings, and twelve quarts of water for half an hour. Let stand until cold, then add skim-milk sufficient to make it like rather thick gruel. Give four quarts three times a day for two pigs. Gradually accustom them to vegetables. Outside leaves of cabbage, lettuce and other greens, potato-peelings and peapods can all be utilised. Boil until tender, mix a little bran or round oats with them, and feed once a day. After a week or ten days gradually reduce the gruel and substitute regular feed, bearing in mind always that frame must be built before fattening is attempted.

If there is plenty of cash in the exchequer, time can be saved by purchasing a

mature sow due to farrow in April. When making your selection, choose a placid-looking animal with a reputation for being a good mother. A vicious, bad-tempered pig is a menace on a home farm. Moreover, the vicious sow is generally a bad mother. Probably no animal is more easily affected by the treatment it receives when young than a pig. Treated kindly, they become tractable, gentle creatures; if abused, surly and dangerous. For this reason it is perhaps better for the amateur to commence with a pair of little ones, or one old sow. Suppose you have bought a sow after breeding; you may expect little ones in sixteen weeks. Her litter may consist of any number from six to fourteen. Let her have plenty of exercise until a few days before she is due, then restrict her range to her own sty.

For safety, it is well to make a fender-like frame that will stand about six inches above the floor and the same from the side-walls. Then if Mrs. Mother is careless enough to roll over, any baby that happens to be in danger of being crushed can escape under the fender. We used some old oak fence-rails, cutting them to fit snugly across from wall to wall, and bored large auger-holes seven inches from each end. Strong bolts and nuts were put through the corners, and blocks of wood six inches square are placed for it to rest on; being bolted together, they are easily taken apart and in and out of the pens, as they are not wanted after the little ones are a few days old.

Have the sleeping-compartment thoroughly cleaned out and bedded with straw and the fender put in place four or five days before the litter is expected, and don't disturb it after that until they are four or five days old. Put a small quantity of clean straw in the outer compartment during the last week. About a month before farrowing-time let bran and ground oats predominate in the sow's rations, and add a little linseed-meal. She should be kept in full vigour, but not allowed to get fat, for which reason corn is best eliminated from her food. After the litter has arrived give nothing heavier than a little bran-gruel for twenty-four hours. Feed lightly for two or three days, then increase, giving her about all she wants; at the end of ten days commence to add corn-meal in limited quantities and green food of some sort, unless the weather is such that the family can go out to pasture. There should be a little opening in the outer compartment large enough for the youngsters to creep through, and outside a fenced-in yard, in which there is no trough. When the babies are two weeks old give them a little grain. They

will soon learn to help themselves, and so reduce the trouble at weaning-time. We take the mother away when they are six or seven weeks old and let her run with the herd until again near farrowing-time. If a boar is kept, he should have his own sty and a separate yard. His food should be good, but not too fattening. The best age is between one and five years.

To keep pigs successfully on the home farm, you must disabuse your mind of the idea that they are naturally dirty creatures, for they really are not. Given clean quarters, a stream to bathe in, and wholesome feed, they are as self-respecting as any animal on the farm. If there is no brook nor spring-place near the pasture, a large patch of sod should be removed, and the hollow filled with water. After a few weeks let it dry up, and make a new bath.

See that no horrible half-mouldy swill-barrels are kept around. Table scraps, excepting meat, vegetable peelings, small potatoes, apples, in fact all unmarketable vegetables, are boiled in the food-cooker with about the same amount of salt that we should use in cooking for the table. When everything is soft, bran, crushed oats, shorts or middlings are stirred in to make it into a thick porridge, the whole being closely covered and allowed to stand until cold. Sometimes cornstalks are chopped and boiled in the same way. When a feed-cooker is used, preparing the food is very little trouble, and most certainly it goes further than uncooked. Each animal has a pailful night and morning. Skim-milk and buttermilk, when there is any to spare, and a forkful of ensilage in the winter when there is no pasture. Water stands before them all the time in one of the cement troughs, into which twice a week a pailful of coal-ashes is put to aid digestion, and once a week an ounce of sulphur and charcoal is added to the feed. When pigs weigh about one hundred pounds, corn can commence to take the place of their grain, for from then on fattening is the one end and aim of management. The fleshy, small or medium pig, which weighs from two hundred and fifty to three hundred pounds brings a better price in the Eastern markets nowadays than the large greasy pig, so that returns are realised more quickly, and it pays to force them with the best of food. If by any chance a sow should farrow late in November, it is more profitable to market the little ones as sucking pigs than to try to keep them through the cold of January and February. Ham and bacon is necessarily a staple in country households, and a real luxury when home-cured. As soon as the meat is cool, it must be cured, for should it become frozen, it is

impossible to turn it into good ham and bacon. Sugar and Wiltshire are the two preferred methods. There is a small hand-machine on the market, specially made for injecting the liquid for the Wiltshire method. The positive price I don't know, but I believe it is about ten dollars. However, I have used a white metal syringe, which holds thirty-six ounces and answered very well for the small quantity undertaken. The process given in an old English receipt is as follows: Add to five gallons of water, twelve pounds of salt, one pound of saltpetre, one ounce of salt prunella, two pounds of brown sugar. Bring slowly to the boiling point, let simmer for fifteen minutes, skim; when cool it is ready to use in the injecting machine or syringe. Insert the syringe in the flesh, and inject the pickle. This is to be done every few inches over the entire surface of the meat, to insure the full piece being permeated with the liquid. Lay the meat on the slab, powder with saltpetre, lay the rind side downwards and cover the cut side with a thick coating of salt. The work should be done on a stone slab, or hardwood bench with raised edges. Let the meat remain fifteen days, and recover with fresh salt. After seven days more, wash the meat with clean cloths, and hang up to dry for several days before smoking. The dry sugar-cured method, is, I think, to be preferred in this country, because it is more generally liked. Place the hams and sides on a slab, and proceed as follows: Mix five pounds of salt with three pounds of brown sugar and two ounces of saltpetre. Thoroughly rub all parts of the meat, every third day for three weeks, after which, wash and wipe and dry for smoking. Of course, you know that nothing but hard wood must be used for the fire. Green hickory is the best. Sausages should be composed of one-third bread—stale bread grated. Never use new or moistened bread. Casings only cost five cents a pound, so it is better to buy them already prepared. A good mixture is five parts lean pork, one part fat, two parts veal or mutton. Pass through the chopping machine, then to every eight pounds add one teaspoonful of dried and finely powdered sage, thyme, and marjoram, two teaspoonfuls each of mustard, pepper and salt. Add the bread-crumbs last, thoroughly mix, and fill the casings. Make short, fat links.

CARING FOR HOUSE PETS

IN all probability no creature on earth suffers so desperately from human ignorance as the house pet. People who keep horses, cattle or even poultry consider it necessary to know something about their wants and requirements, but the poor pet animal is the recipient of much affection and many cruelties, for it is cruel to ruin the health by injudicious feeding, and vitality and happiness by want of exercise. A wholesome, happy dog or cat is the best playfellow children can have; an entertaining companion for any member of the human race, but an ailing, unhealthy animal is a positive menace to the family.

The young dog just taken from its mother requires special care and patient training, or it will not develop into an intelligent companion. Even an older dog who comes from kennels of repute will require careful guiding. Of course, I refer to the general house-dog; hunting-dogs are usually broken to their special duties before being sold. But the house or pet dog must understand a multitude of things, all of which vary according to the idiosyncrasies of the family who adopt it, so it has to readjust its habits to new owners and environment.

Have a kennel ready before the dog arrives. A dry-goods case covered with roofing-paper will do if it has two heavy pieces of scantling nailed across the bottom, to lift it three or four inches above the ground, so that the air can circulate under it and prevent moisture from the ground making the floor damp. Place it in a sheltered position, out of winter winds or the glare of a summer sun. A good straw bed every week in cold weather and a good scrubbing in warm weather are sanitary precautions which should be observed. Have a strong screw-eye at one side of the kennel and a chain with a swivel snap at each end to prevent the chain getting twisted up to half its length, and for convenience when handling a strange dog.

If the dog has been crated and expressed, remember that in all probability the

poor beast will be frightened, tired and cross. Talk to it for a while, and manage, if possible, to get a collar on and a chain attached before opening the crate. Then let Mr. Dog get out by himself, at his own time. Walk him about for some time and let him inspect the premises in the neighbourhood of the house. Naturally cleanly dogs will need the exercise, so don't curtail it. If there are any signs of constipation, a dish of sour milk will usually correct the trouble. If, however, the journey has the reverse effect, which is very likely to be the case in summer, scald milk, pour over some stale bread which has been toasted and feed when quite cool.

When the dog has finished his inspection of the premises, fasten him to the kennel and be sure to provide a solid, heavy water-pan that cannot easily be knocked over. Leave him to become accustomed to his new home and to sleep off the nervous strain of the journey. Should he whine or bark, don't go near him. He is too excited and upset to be disciplined, and sympathy and petting at this point would mean a prolonged fight later.

Feed him yourself and take him for a run on chain in the evening, early in the morning and at noon. Decide which will be the most convenient hours and try not to change them. Two or three days are usually sufficient to make the average dog accept a new master and claim the kennel as his castle, so after that time he can be allowed freedom.

If the dog is young and is to sleep out of doors, he should be chained at night, otherwise he will be apt to form the habit of wandering off in the early morning hours or moonlight nights, but no dog, young or old, should be kept perpetually chained. Young dogs, especially of the terrier class, are benefited by being chained in a cool, shady spot during the middle of the day, as they are apt to rush about and be overcome by the heat, which often causes fits and terrifies the family into believing that it is a case of hydrophobia.

If the new dog is under nine months of age, feed him three times a day. Bread and milk, oatmeal, hominy, or any such food which has been well boiled, allowed to cool and covered with milk, makes a suitable breakfast. Lunch may be half a puppy-cake or a slice of brown bread. The main meal should consist of boiled meat, onions and rice, mixed with some cooked green vegetable.

After the ninth month two meals a day are sufficient. Be as careful not to overfeed as not to underfeed. A dog should be ready for each meal, but never ravenously hungry. Don't give milk which has not been scalded or potatoes in any form, if you wish to keep the puppy free from worms. Sour milk once or twice a week is beneficial, but must not be given oftener. Twice a week a bone with some meat on it is needed. Some people think that raw meat is bad for dogs, but a limited quantity of fresh lean meat is really necessary for growing dogs, and being on the bone necessitates a lot of gnawing, which is good for the teeth and encourages the flow of saliva which aids digestion.

If you should have a mother-dog with puppies, give her a large sleeping place; dry and comfortably warm in winter, dry and cool in summer. Puppies should be taught to drink as soon as possible after they are six weeks old. Condensed milk saves the trouble of scalding cow's milk. Whichever is used should be given warm; never hot or cold. The puppies will learn to eat more quickly if the mother is taken away for about an hour before offering food. Gradually increase the length of her absence until she spends only the nights with her babies, and weaning will be accomplished without any trouble.

To prevent worms, the one great trouble which attacks all dogs, give the mother a dose of worm medicine three or four weeks before the babies are expected, and give the babies very small doses when they are three weeks old, six weeks old and nine weeks old. After that time I depend on sour milk, and an occasional dose of castor-oil.

House-breaking should be attended to as soon as the puppies commence to run about. Never leave a puppy alone in a room, for one mistake prompts others. Be watchful, and the moment a puppy begins to fidget or to run about, put it outside or in a box containing sawdust. Patience and perseverance are necessary at first, but in two or three weeks the lesson will be perfectly learned, especially if the hours of taking the dogs out are strictly adhered to.

Old dogs, whose education in this respect has been neglected, can be taught tidy habits if fed at regular hours, the last meal not later than three o'clock in the afternoon, the evening exercise being postponed till about eight, after which they should be fastened to the box or basket which acts as their bed by a chain not more than two feet long. Release early in the morning and take out at once. They will soon understand the discipline of enforced hours, for

the close proximity of their bed calls natural instinct to their assistance. The habit once formed, it will prevail when allowed to sleep in any part of the house.

Bathing dogs of any kind or size I don't believe in very much, for it robs the skin of the natural oil which is required to feed the hair and keep it in condition. Brushing, however, is quite necessary, especially in the summer, when fleas may be about, and it is well to begin early in the season to rub some good insect-powder into the hair, then after about half an hour brush it out thoroughly.

Delicate small dogs with long hair can have a mixture of cocoanut and sweet almond-oil rubbed into the hair once a week and brushed out again.

If any accident makes washing unavoidable, stand the dog in a small tub half filled with warm water, rub white soap on a flesh-brush, and brush from the center of the back with straight strokes to the end of the hair on each side. Take the front paws in your left hand, letting the dog stand on his hind legs, and brush from the neck down to clean the under part of the body. The head should come last. Wash the ears first, being careful not to let water run into them. Hold the nose up and wash the top of the head and sides of the face, so that the water runs backward and not into the eyes. Last of all wash the muzzle, being very careful about soap. Rinse in two clear waters, then wrap the body in a warm towel while you wipe the face and the inside of the ears.

When about half dry let him down for a shake, but be careful he does not escape under a piece of furniture and roll, as he will probably try to do. Brush until quite dry, rubbing a little oil onto the bristles, at the end of the dressing.

Treat your dog at all ages with kindly consideration. Be patiently and considerately firm, remembering that you must rule through affection and respect. Don't hector or worry all the time. Be your dog's playfellow as well as master, and he will soon become an intelligent and faithful protector.

Cats can be kept in a city home with less trouble than dogs, because they haven't got to be taken out to exercise, a duty which can't be shirked with Mr. Dog. Cats are needed in suburban or country houses at least as much as dogs. The master of the house can usually guard against the rarely met

burglar, but no human vigilance is adroit enough to fight four-legged pantry thieves, and a farm must have a good-sized tribe of felines to prevent loss in the barn, poultry house and corn-crib.

Well-bred cats are just as good hunters as common ones, so it is wise for the self-supporting home to keep aristocratic cats for the house, as there is no occasion to do violence to your feelings when kittens arrive, because they can always be sold at fairly good prices.

In the outbuilding we keep Maltese and very large blacks. We have so many requests for the Maltese and blacks that even the plebeian mothers are allowed to keep one or two kits of every litter, for having children to provide for is a great spur to Mrs. Cat's hunting proclivities.

Considering the service cats perform for humanity by keeping in check the numerous varieties of rodents which abound in cities no less than in country places, they should be the most highly prized and cared-for small animals we have instead of the most abused.

There seems to be a prevailing but erroneous idea that cats are neither affectionate nor companionable. Treat a cat as you would an intelligent dog and she will compare so favorably that Mr. Dog will have to be extremely gifted to retain his superiority.

The outside cats should have plenty of fresh milk night and morning when the cows are milked, not only as food, but to counteract the injurious effect of the number of mice they eat. New milk is rich in cream fats, and acts as an antidote to the poison contained in the gall of the mice. Twice a week we give them a feed of raw meat, on the bone if we can get enough bones, for even the rat-catchers must be well fed, or they lack the vitality to hunt.

Having plenty of exercise, and being able to find grass and herbs for themselves, barn-cats are usually normal, healthy creatures, and need little dieting or doctoring from their owners, but they should always have a good, warm place to sleep in.

The city house-cat leads such a semi-artificial life that she needs more care. Milk which has stood several hours and been skimmed is not an especially

good food. It should be scalded and allowed to cool before it is given to kittens.

People rarely think to provide water for cats, yet they really prefer it to milk, and drink a surprising quantity when a dish of it is kept in one regular place. Potatoes should be as rigidly tabooed in the kittens' diet as in the puppies'. Accustom a cat to eat cereal or bread and milk in the morning.

Our house-cats always have a little strip of fat bacon when it has been cut for breakfast, and I am sure that the fat and salt are useful worm preventives. At noon they have liver or beef which has been stewed with onions and any green vegetable which we may have; for supper a saucer of milk.

It is very easy to teach a kitten to be cleanly if you exercise vigilance at first and provide a shallow box or pan half filled with ashes or sawdust. One thing which must be understood by the city housekeeper whose pet has to depend entirely upon the box is that it must be emptied regularly, at least once a day, and, if necessary, twice. Neglect it and the animal's instinct of cleanliness is offended, and it will select some place for itself, thereby falling into untidy habits.



RAISING CANARIES FOR MARKET

CANARIES are dear, fascinating little creatures to keep, and no special conditions for raising which cannot be successfully accomplished in a limited space. The most fastidious woman cannot object to caring for a few families. One male and two females will start a profitable flock. The male bird should be selected for his voice, regardless of his color or shape. The two other birds, on the contrary, should be selected for those very qualifications. The male should be darker and deeper in colour than the female. In fact, male birds, with green on their wings and heads, mated with pale females, produce the best-coloured young ones. Never allow two top-knot birds to pair, for, oddly enough, the progeny will usually have bald or deformed heads. A breeding cage with separate compartments costs at least \$4, but a very good one can be made at home out of empty dry goods or grocery boxes. Of course, it must be a well-made, smooth one, otherwise it might hurt the birds. Painting is not advisable, but it is well to rub off any rough surfaces with coarse sandpaper. Remove the lid and one side of the box. Leave the bottom, one side and ends intact. Turn the box so that the remaining side becomes the bottom of the cage. Next get a piece of sheet zinc, nick the corners, and turn them up all around, to form a tray an inch deep. This is to fit inside the cage. Square-meshed, galvanised cloth is the best for the front and top. Fasten it to the back, ends and front with matting tacks, leaving a space at the bottom in front for the tray to slip in under. Put a partition through the middle of the cage, with a small door in it. A door is also necessary in each compartment. The ordinary seed and water dishes can't be improved on by home contrivances, so add them to the purchased list.

Two half cocoanut shells, or small boxes, must be hung up on the end or back of each compartment as foundations for the nest. Cover the bottom of the tray with a thick layer of bird-gravel, and hang up materials for nest-building in each compartment. Dried moss, bits of raw cotton, or short fine hay, are all suitable. The material for a cage three feet long, eighteen inches high and

deep, will only cost a dollar, so the homemade cage, in addition to being an economy, has the advantage of size, which means a great deal in a breeding cage, as it allows the birds so much more exercise.

Put a female in each compartment, so that they may become accustomed to each other. In about a week, the door in the partition can be opened, and both birds allowed the freedom of both compartments. During this time, the male bird must be kept in his own cage, and in another room. During these preliminary stages, which should run from three to four weeks, the three birds must have, in addition to their regular food, a small dish of mash every morning, made of hard-boiled egg chopped very fine, stale bread-crumbs, and hulled oats ground (not oatmeal or rolled oats), equal parts of each, just moistened with scalded milk, and, of course, allowed to cool before being fed to the birds.

After the two females are on friendly terms, bring the male bird's cage into the room, and hang it before the breeding-cage, and out of sight, if possible. Curiosity will be aroused, and the birds will spend most of their time talking to each other, and endeavouring to see each other. A week later, close the door in the partition, leaving a female in each compartment. Put the two cages on a level; two or three days later, open the door of one compartment, and the door of the male bird's cage, placing them close together. He will soon commence going in and out of the breeding-cage, and in a day or so his cage may be removed. After the hen-bird commences to sit, open the door in the partition, and let the male into the second compartment. When the second hen commences to sit, the door in the compartment can be left permanently open, as there is little fear of the birds' fighting, and the male will divide his attention between the two families, helping to feed and care for the nestlings.

Special care is necessary during the incubating period, for the eggs of these little songsters are exceedingly fragile, and a loud noise to which they are unaccustomed, even the slamming of a door, will sometimes addle them. Too bright a light is also annoying, so a piece of green baize pinned around the corner of the cage will give a sense of seclusion which will keep the bird tranquil and happy. Allow nothing to worry or trouble them while sitting.

Fourteen days after the first egg is laid, the young appear. The tiny creatures are a great disappointment to those who see them for the first time. Chicks

and ducklings are lovely from the time they first emerge from the shell; but a young canary is featherless, blind, and has the longest neck imaginable. In a short time, however, it becomes a golden ball of down, and its early unattractiveness is forgotten in admiration.

Continue the mash food, but after the little ones are hatched, feed night and morning. Add rape seed which has been boiled a few minutes, and then rinsed through cold water. The nestlings' eyes open about the sixth day. After the thirteenth day they will begin feeding themselves in the most independent manner. When the brood is a month old, remove them to another cage. They will then begin to lose their first crop of feathers, and must be carefully protected from draughts, lest they take cold. At the end of this first moulting period, you can tell how the young will develop, both for shape and song.

The mother bird will usually begin to build a second nest when the babies in the first are about fourteen days old, sometimes keeping up this double family from February till June; so that with good birds you can count on having eight broods from the two females, with an average of sixteen male birds. If the trainer—that is to say, the bird who teaches the young ones to sing—is a good songster, the males should bring two dollars apiece when sixteen weeks old.

The young females can, with a little patience, be trained and taught tricks, which will make them worth as much or more than their brothers, who have only voice to recommend them; but if the female's education is ignored, they are not worth more than fifty cents apiece, unless kept to breeding age. Cages must be kept scrupulously clean, with plenty of sand on the floor. Accustom the birds to having a bath dish put in for a time every morning. Should the feet look soiled, or the nails be too long, take the bird firmly, but gently, in your hand, and hold the feet in warm soap and water, to remove all dirt and soften the nails, the extreme points of which can be cut with a pair of sharp, fine scissors. Take care not to go above or too near the end—the end of the nerve that can be seen running through the upper part of the nail; for if you do, it will be painful to the bird, as cutting into the quick of your finger-nail would be. If you are a real bird-lover, and have time and patience, you can accustom a flock to your presence until they will let you go among them in a flying-room and handle them at your pleasure; for they are naturally most

affectionate, gentle little creatures, as full of playfulness as a kitten. A solitary songster will feel neglect and loneliness to a pitiable degree, but will respond to petting as readily as a child. A canary from the general stock of a bird-store is timid and reserved at first, but will soon establish friendly relations between himself and his owner.



THE BUSINESS SIDE

TO make the home profitable, there must be some system of bookkeeping instituted, no matter how simple, also there must be some ingenuity exercised about marketing. Take advantage of the long evenings to start books and lay plans for the disposal of surplus products to the best advantage. Unless you know what each animal costs to keep, and what returns you are receiving from it, you can't be sure what your profits really are. I know how most amateurs hate to be bound down to the actualities of a balance-sheet with its cold facts on what it costs to produce this, that or the other thing. But experience has taught me that it is the crucial point and must be ascertained. Your accounts need not be elaborate but they must be clear and accurate. Establish some simple system of bookkeeping and after you have once overcome prejudice and made the plunge, it is really gratifying to know, for a positive fact whether things are really paying or not.

The first step toward general order is keeping records of individual animals or flocks, as the case may be, and also of the farm and garden crops. Bestow a name or number upon each animal, and if you are going in for husbandry in an extensive way, have a book for each variety. If only two or three animals are to be kept, a general stock-book will do. Each field and meadow should be named or numbered, and a book devoted to work done on each.

Poultry also needs a special book; so do expenses.

My plan is to head a page in the cattle register with the animal's name or number; date of birth or purchase, with price; followed by when bred, to whom, when due, actual date of event, sex of offspring and name or number bestowed upon it. On the opposite page, if the animal is a cow, the amount of milk she gives, a week after calving, and at one measuring every month until we cease milking her. Milk is tested for butter-fats once in every three months and the result recorded.

The record of pigs and sheep is not so elaborate, because, of course, there is only breeding and arrival of offspring to be noted. For poultry, the number of pens heads the page, followed by the number of birds it contains, and the individual numbers, and on the opposite page the number of eggs gathered each week.

The feed-book contains the amount of grain, etc., used for each variety of stock.

The farm-book is kept in a like manner, the field number heading the page; then, when ploughed; how and to what extent fertilised; with what variety of seeds sown; number of times cultivated, when harvested and the amount of the crop.

On the opposite page, in pencil, are suggestions for catch crops and rotation for main planting for a period of five years. Small note-pads with pencils attached are fastened up in every stall or pen of each outbuilding, and events are jotted down as they occur, so that there is no chance of forgetting or getting things mixed. Every Saturday the sheets are torn from the pads and brought to the house, for the items to be transferred to the different books. It does not take half an hour each week to do the clerical work, and it saves innumerable mistakes and accidents, besides furnishing proof of the relative value of each animal and piece of land.

On one side of the expense book all money spent is entered; on the other, all moneys received. A balance is struck every month and transferred to a general ledger, which, in turn, is balanced once a year.

Another thing that must be understood is that all profits must not be considered as a bonus to be used for personal pleasure. Some part of all moneys received should be set aside as working capital, otherwise improvement and extension are simply impossible.

Marketing home products advantageously is of paramount importance, and seems to be the point on which many beginners fail. Commission men and wholesale markets should not be resorted to, because home-grown products of all descriptions excel in quality and not in quantity; therefore, appeal to high-class private custom, who desire the very best, regardless of price.

I have never sold through any of the ordinary market channels, yet have always had more orders than I could fill and received a little more than the ordinary prices. Naturally the location of the home and the quality of the wares must influence the returns to some extent, but not half so much as the method of packing and shipping. Nicety in these respects captures the favor of customers and they take pride in exhibiting things to their friends—which is the very best sort of advertising a home business can have.

When I had reached the point where I knew that I could depend on a certain number of eggs regularly, I wrote to a doctor friend in the city and told him that I could promise to deliver six dozen strictly fresh-laid eggs twice a week for the whole year, at a uniform price of forty-five cents a dozen; customers to pay the express charges, which would be twenty-five cents on each six dozen. (Express companies return empty packages free of charge.) Within a month he had found four customers for me, who would take two dozen a week each, the box to be delivered at his house, where the other three customers were to call every Saturday and Wednesday.

All poultry-supply houses have wooden boxes for sale with divided trays, made to hold three, six or twelve dozen eggs, for about two dollars apiece. Before the year was out each of the three other customers had interested one or two friends, with the result that three six-dozen boxes were shipped three times a week, and the following winter I had orders from the same people for butter and table poultry.

In this way my market grew, as did my stock, and I never had any surplus to worry about. Of course, I realise that there was an element of good luck in having a doctor for a friend, but when there is no good Samaritan to start a clientele for you, energy will surely accomplish it; for every housekeeper longs to get good, fresh-delivered table delicacies which have not passed through a dozen hands.

I know one woman who got her first customer by writing personal notes to women of social prominence in a near-by town, whose addresses she got from a directory. From twenty letters she received two replies, but they both became regular customers, and recommended friends.

Another instance of personal effort took the form of calls upon doctors and

clergymen. Still another woman interested the fashionable milliner of her town to canvass orders among her customers, and paid for the favour with eggs and butter.

A more impersonal way of gaining customers would be to arrange with one or two well-located drug or stationery stores for the display of large cards bearing notices of the things for sale and your address; but, of course, there are dozens of ways to find customers. Advertising in newspapers will do as a last resource, but strictly personal methods are the best.

Now about packing. Eggs should never be more than two days old and must be sorted into lots of uniform color and size. If the eggs should become soiled in muddy weather, wipe them with a damp cloth as soon as gathered, so that the shell does not become permanently stained.

For private customers, table birds should be especially fattened and dry picked, which means that the feathers are removed as soon as the bird has been killed, without its being dipped into scalding water. As the scalding spoils the flavour, birds so dressed are only accepted by third-class market.

After the feathers and pin-feathers have all been removed, the bird should be drawn, washed in cold water, wiped quite dry, a piece of charcoal or peeled onion put inside the body and then trussed, for they look so much more attractive than when shipped in a sprawling condition.

Drawing and dressing for market is not the custom for general marketing in this country, but it is universal in Europe, and private customers always appreciate the improvement such rigid cleanliness necessarily makes in flavour. Wrap each bird in a square of new cheese-cloth. Place a few sprigs of parsley, thyme and summer savoury at one side, for the convenience of the cook; then put on an outer wrapping of white paper and tie with clean, fresh string. Things going from a home should look dainty.

Don't try sending butter by express unless you have orders enough to make it worth while to buy one of the refrigerator hampers which are now used for automobiles. A hamper which costs about four dollars will hold five or six pounds of butter, so it is not a very great outlay when you can get forty-five cents a pound for your butter. In making up hampers of fruit and vegetables,

use small grape-baskets to divide the different varieties. Line them with green leaves. Pack everything with dainty care and reject everything which is not in perfect condition. Don't let anything interfere with the arranged schedule for shipping. Gain a reputation for uniform excellence and punctuality, and success is sure.

THE END

Transcriber's Note:

Obvious printer errors corrected silently.

Inconsistent spelling and hyphenation are as in the original.

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AUTHOR OF "THE EARTH'S BOUNTY," ETC. ILLUSTRATED
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