FORCING SHRUBS AND TWIGS—STATE TRACTORS AID FARMERS

Early in the spring before the buds have started on the trees school children have for years taken twigs of pussy willows with the furry buds well started as a bouquet for the teacher's desk. The twigs were cut early and placed in water in the living room for a few days, until the buds swell, the heat of the room causing them to start. Twigs of flowering trees and shrubs may be brought into bloom during the winter in about this same manner for home decoration.

Twigs of all of the following plants can be forced into bloom by cutting them while dormant and placing the stems in water in a sunny window a living room: Azalea indica, Ca canadensis or Judas tree, Chus japonica or Japanese quince, utzia florida or flowering dogwood, ervilla gracilis, deutzia crenata grandiflorida or weigelia, exochia viridisflora or pearl bush; ia latifolia or sima or golden bell, suckle, mock mountain laurel, ond, flowering orange, flowerindrons, rambler apple, w, prairie willow, roses, pussy irea, prunifolia or goat willow spiraea Van Houttei, bridal waria. All these are common trees and shrubs. lilac ar paral is not difficult to obtain so e desiring to try the experiment.

these plants can be forced, that made to flower in pots or tubs in greenhouses or conservatories if started at the proper season while the plants are dormant or at rest.

The dormant condition of plants has been the subject of considerable controversy by nurserymen and the October Bulletin of the Missouri Botanical Garden makes the situation clear. It says:

"The rest period of plants may be defined as the time when all outward activities appear to be at a standstill. It usually begins in the fall with the advent of conditions unfavorable to growth and continues until these conditions are improved in the spring. In the case of deciduous trees and shrubs the rest period actually begins when the length growth ceases and the terminal buds form. This may take place as early as July, the plants gradually becoming more and more dormant until complete defoliation takes place. The herbaceous perennials begin to rest after their tops die down in the fall and crown buds are formed. Bulbs enter their dormancy within two to four weeks after flowering, when the tops yellow and die. The length of the period of rest varies with the different species, some are ready to begin growth in a few weeks, others are unable to start for several months.

"The period of dormancy may be shortened by means of various treatments. Plants with long rest periods are difficult to arouse during the early stages, but the greater part may be readily forced during the middle portion of the period. Among the agents employed are ether, drying, freezing, submerging in warm water, immersing in weak alcohol, mechanical injuries, the use of weak solutions of hydrochloric and tartaric acids, &c.

"Twigs of flowering shrubs like lilac, golden bell, deutzia and spiraea may be forced into bloom in midwinter by submerging in warm water. A more satisfactory method, however, consists of placing twigs in a tight container and pouring in ether at the rate of one teaspoonful to every 462 cubic inches of space. The plants or twigs should be allowed to remain in the vapor for twenty-four hours and then be placed in water in a moist room. The moisture is essential to prevent the drying out of buds before growth starts.

"Shrubs require special preliminary treatment if they are to be forced into successful bloom. It is absolutely necessary that vegetation be completely arrested and the plants shall have entered into the period of complete repose. Unless this condition is observed, notwithstanding the best processes of forcing and the most improved equipment, the plants will develop leaves, but the flower buds will be blasted.

"To insure a compact, fibrous root system the plants are frequently transplanted in the garden. In addition, it is desirable to pot the plants in the spring and keep them plunged in soil during summer. This will help ripen the wood more evenly and bring them into dormancy sooner. After a frost or two they should be placed in a cool house or cellar and kept at a temperature of 35 degrees F. The soil should not be allowed to become dry. If soaked when stored, no further watering is likely to be required.

"There are actually three stages of the rest period; the first, when parts of the plant cease growing; second, the complete repose, and third, the beginning of growth again. During the period of complete repose in December is the best time to begin forcing. A temperature of 45 to 50 degrees F. in the greenhouse with constant syringing to force out the buds will bring plants into bloom in ten to twelve weeks. In the spring the time of forcing into bloom is shortened to four to six weeks. If ether is used its effect is to shorten the rest period probably by stimulation of enzyme action. At a temperature of 60 to 65 degrees F. during the early period of rest one-half ounce of ether should be used per cubic foot of space. The amount should be decreased during the later stages of dormancy or if the relative humidity of the chamber is high. Care must be taken that the soil surrounding the plants is perfectly dry, as ether absorbs water and penetrates to the roots, causing injury and at the same time losing some of its efficiency because of the absorption of vapor.

"The plants should be placed in an airtight chamber, a small opening being left at the top for the insertion of a sponge containing the ether, this opening being afterward sealed.

"The time of exposure is variable, the usual time being forty-eight hours, but decreasing late in the season. Sometimes a second exposure of twenty-four hours is made after a few days interim. The treatment should always be given during the day, as artificial light may cause the mixed ether and air to explode.

"Herbaceous perennials and biennials can be forced in the same manner as the shrubs and be planted in beds under glass or potted after several frosts in the fall. forced successfully

"Bulbs are rization, because they by means of e late spring or summer are gathered months. After planting and stored are allowed to remain in the time for a number of weeks, the cold when brought in for forcing so that they are well over the rest condition.

Plants which respond readily to th do not need any ether stimulation. The greater the resistance of the dormant plant to growth under favorable conditions the greater the advantage of etherization. The expense of forcing is reduced in propotion to the length of time the plants occupy the greenhouses and the lower temperature necessary. An early market and a better quality result in greater remuneration to the grower."

STATE TRACTORS TO BOOST FARM PRODUCTION.

In Maryland the State Council of Defence, to insure an increase in wheat acreage, is the first organization to offer farmers not only advice, but real help, having purchased four tractors to be used in preparing land by ploughing, harvesting, &c. Two of these tractors are being used in Kent county and one each in Cecil and Harford counties. The routing of the tractors is in the hands of the county agents. The farmers' applications are listed and itineraries for the tractors are made out accordingly.

Charges for the care of the tractors are based on the actual cost of operation. These charges run from $2.50 to $3 an acre for ploughing and 50 cents an acre for disking or harrowing. The results thus far have been entirely satisfactory.

In addition to helping meet an emergency, the use of the tractors has resulted in the purchase of a number of them by individual farmers and groups of farmers.

New York should have one hundred State owned tractors as a start on this same plan for use next spring. Later, when the work is properly organised, additional tractors could be purchased to help supply the demand.

At an average cost of $2,000 each this would represent an outlay of $200,000. Several counties can well afford to purchase a few tractors. The money necessary to purchase six tractors, say $10,000, would never be noticed in the annual budget of each of thirty-three counties in the State, where the tractors would be real helps to farmers. This would give 198 additional public tractors, a total of 298. These machines would produce results. The whole lot could be managed in such a way, the State and county authorities working together, so the tractors could be routed to accomplish the greatest results with the least possible loss of time.

When not in use on farms the tractors could be used in hauling produce to market and transporting other things, and in this way helping to relieve the railroad congestion.

New York State will spend no doubt during the year considerably more than the sum required to purchase one hundred tractors in an effort to advance agriculture and speed up production in ways that will be almost wholly unproductive. Why not do the sensible thing and do it on time?

Farmers' applications can be called for immediately and the tractors routed so as to keep them constantly busy without delays or time wasted.

If a small percentage of the money expended in obtaining publicity and getting somebody's name in print was spent in some such sensible manner as suggested positive results would be accomplished. The general hurrah and the mass of publicity matter with which the mails were burdened last season was so much waste energy, but here is an idea that permits each State to really do something to help farmers increase production. Farmers have been surfeited with advice and cannot use more. What is wanted and quickly is help. This help is not solely for the benefit of the farmers, but for the masses in the form of abundant food.

ELIMINATE WAR GARDEN WASTE.

Max Schling, chairman of the Committee on Parks and Squares of the Fifth Avenue Association, suggests instead of tearing up front lawns or planting new ground in an effort to be patriotic in the production of vegetables next spring, that a cooperative effort be made. New land cultivated for the first time is almost certain to cost more than the harvest will be worth and also the second year. With good cultivation and proper fertilizing the third year should be fairly productive; that is, as new land is usually operated for war time gardens.

Mr. Schling's proposal is: "Instead of many individual efforts I suggest cooperation.

"Within a half hour's ride from New York are thousands of acres of good land. Take for instance New Jersey. If each of the wealthy men who are ripping up their lawns for planting because they want to help would put up $100 or $200 and cultivate this land it would pay its expense possibly the first year. It would give good results and a good profit the second year. The money this land would bring could be utilized for the purpose of opening up new ground and developing more and more channels for production.

"By combining efforts, which are all for the same end, by applying a uniform and correct system of cultivation under similar conditions, and by cutting down the overhead of amateur farming by efficient methods and supervision, the many wealthy men who want to help in food conservation and production can, I am sure, attain results satisfactory to themselves and helpful to our Government."

BEWARE OF TREE BARGAINS.

Late last spring a so-called horticultural concern sent a car of trees to a station on Long Island and induced one of the professors of an agricultural college there to indorse the proposition. Appeals were then sent to the newspapers showing the need of lect their best stock with which to fill their orders. That which is too poor to be sent out is finally gathered up and burned. Naturally enough, if somebody comes along and offers a cent or two each for such trees and agrees to dig and pack them so the nurserymen are at no expense, selling them for really what they are, the honest nurserymen are ahead whatever they receive, besides saving the expense of digging and burning the stock. The stock thus gathered for a song from various nurseries is packed in a freight car and shipped to a point near some large city. The newspapers are then "worked" for free notices by the nursery concern which patriotically (and great stress is laid on the patriotism) offers to supply trees at less than cost, only ten cents each at the car, from the great surplus stock of their enormous nurseries in western New York, to those who wish to beautify their home grounds or plant orchards to produce food. This price is made only in consideration of the fact of overproduction. All varieties are in stock. It only takes a moment to write any desired name on the label.

Editors should know what they are doing before giving publicity to planting fruit trees and offering trees at the car at ten cents each.

The New York newspapers printed this free advertising on their editorial pages and free notices also appeared in New England papers notwithstanding the fact that the men back of this scheme owed some of the newspapers for unpaid advertising bills for the last season's advertising and for that of previous years.

Every year honest nurserymen see schemes of this kind. Advertising of this character will not be admitted to the columns of THE SUN.

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SPIRAEA VAN HOUTEII.

SPRING OR AUTUMN PLANTING.

There has been considerable discussion recently whether spring or autumn planting of fruit and ornamental trees was best. The writer has planted trees for thirty years or more and in all this time does not recall a single tree that was planted which failed to live. All the planting was done in the spring, largely because spring planting had been successful and planting at this time became something of a habit. Occasionally autumn planting proved successful, but these were trees that were offered in the autumn by nurserymen and were purchased and planted then, fearing the supply might be low or exhausted in the spring.

Trees carefully handled in planting and properly planted, if received in good condition, should live. Peach trees in the North do best, it is generally agreed, when planted in the spring.

Called upon to settle disputes between nurserymen and planters as to the responsibility for trees not living I have found the planter to be at fault more frequently than the nurseryman, and when shown the cause of the trouble the responsibility was admitted. Sometimes delay in transit has ruined the stock, but this does not often occur and in such cases the railroads have been responsible.

To settle the question as to the value of autumn or spring planting some of the leading arboriculturists have been asked for their opinions. The first is by Charles A. Green, one of the oldest nurserymen in America, who operates a large nursery and extensive orchards and small fruit plantations.

MOST DESIRABLE SEASON FOR PLANTING TREES, FALL OR SPRING?

By CHARLES A. GREEN.

In attempting to answer this question I must ask you in what part of the country does the planter live. If he lives in the extreme north fall planting should not be advised. If he lives in the southern or middle south, that is in Pennsylvania, Virginia, North Carolina, southern Ohio, Indiana, Tennessee, Kentucky or Missouri, then in that case fall planting would be highly desirable and profitable, resulting in a gain of almost a year's growth, provided the planting could be done early enough in the fall.

When trees are planted the average planter does not compact the soil as firmly about the roots as he should. A tree growing in its natural condition will be found to have its roots bedded firmly in firm soil. This should teach us that in planting the tree we should compact the earth over the roots very firmly but not so firmly at the surface. Since this firm packing of the soil is often neglected, the fall and winter rains cause the earth to become firmly packed around the roots, and this is one reason why fall planting is desirable. Further than this, the wounds of newly fall planted trees begin to heal over immediately after planting, and often new fibrous roots are formed after the fall planting.

Many times when trees are ordered in the spring they do not arrive early enough to get full benefit from the spring rains, but when planted in the fall they get the full benefit of these rains and get a much earlier start than those planted in the spring.

Fall is usually more a season of leisure than spring. When spring opens almost every kind of work needs to be done without delay, and some things appear to be delayed of necessity. Usually the condition of the soil is more crumbly and less water-soaked in the fall than in the spring, thus making fall a more desirable season for planting.

Notwithstanding the facts set forth as above, more than nine-tenths of all the planting done in this country is done in the spring. When the spring buds begin to swell and the grass to grow and the dandelions to blossom there is every suggestion for planting, which inspires many to set out trees, plants, vines and shrubs. The attention is called to the subject more vividly than in the fall. I would advise banking up around trees fall planted. The earth should be banked up around the base of the trunk to the height of at least a foot. This is advisable also with shrubs and small fruit plants and vines.

Susan P. Okie of London writes that "they eat larks over here, a throw back to cannibalism. Let us hope that this appetite will disappear with the appendix."

Nowhere but in England and Ireland can the song of the lark be heard at its best. How human beings can kill such beautiful songsters and eat them is difficult to understand. The wonderful notes of these birds, never to be forgotten by those who have heard them, should be sufficient to assure their protection, to say nothing of the valuable services they render in destroying insects.

MORE VEGETABLES NEEDED IN U. S. ARMY CANTONMENTS.

The various army cantonments throughout the country are creating an unusual demand for various kinds of vegetables. The thousands of soldiers at each of these cantonments equal the population of good sized cities. As these cantonments have grown up within a very short time the question of vegetables, especially of the more perishable sort, has become rather serious.

In dealing with this situation the War Department has decided to purchase vegetables from those already engaged in the business of vegetable growing so far as possible rather than to engage in vegetable growing with hired help and purchased equipment. Consequently each camp quartermaster has been instructed to furnish the growers in the vicinity of each camp and cantonment with the approximate quantity of vegetables that will be required during a given period.

These growers are to be informed that the Government will purchase vegetables after sending out circular proposals, and that the award will be given to the grower or firm that offers the vegetables at the lowest price.

It is believed that this plan will stimulate during the coming season the production of those crops most desired in the region of the cantonments, where otherwise they might not be plentiful.

KEEPING CHRYSANTHEMUM FLOWERS FRESH.

With a penknife strip up the bark at the end of the stems of chrysanthemums without removing it for an inch or more. Then place the stems in deep vases so the water will come to within two inches of the flower head. The water should be quite hot. Leave the flowers for twenty-four hours, after which the flowers may be transferred to vases of cold water.

The preliminary treatment prevents the formation of a calus, which is nature's method of healing a wound, and so enables the flower stems to take up the maximum amount of water, which they cannot do when placed in water in the ordinary manner. The stems should be placed in water as soon as possible after they are gathered. Shorten the stems slightly by cutting off the ends every second day.

A CITY CHILD'S EGG QUESTION.

Polly—Mother, do farmers milk cows to get milk?

Mother—Yes, Polly.

Polly—Well, if farmers milk cows to get milk, do they egg hens to get eggs?

The red poinsettia or Christmas plant is familiar to all, but not many know that there is a white poinsettia similar to the red except the color of the flowers.

GARDEN EFFICIENCY FOR AMATEURS.

With our severe winters and late springs the coldframe is almost indispensable. The regulation size sash is 3 by 6 feet. Directions for construction of frame may be found in first class seed catalogues. The soil used should be moderately rich, light and not easily packed.

When preparing the bed at seed sowing time place a bushel basket beside the bed, cover it with a plasterer's sieve and shovel from the bed enough dirt, sifted through the sieve, to fill the basket. When the dirt in the coldframe is thoroughly dug over and raked smooth add the sifted dirt, carefully rake the bed level and the surface will be fine enough for the reception of the smallest seeds. With watering can thoroughly water the prepared bed and allow it to stand twenty-four hours before sowing seed. The edge of a piece of lath or thin board cut a little less than three feet long is used to press into the soil, thus marking the straight row for reception of seed. After seed has been sown sift a thin covering of dry soil over the rows and softly press in with your piece of board, not so energetically, however, that the seedlings will never be able to push up through the surface.

I painted the inside back and front boards of my frame willow green and when dry divided it vertically by white lines into rows about four or five inches apart, which were numbered. A six foot frame accommodates from sixteen to eighteen rows. Write the list on a card and tack it above the numerals. By reference to the card you immediately know what the tiny seedlings are when they appear. Also enter in your garden book the list and numbers in case something happens to the coldframe card.

But my coldframe was full and there were more seeds I wished to coldframe. So I bought a set of little boxes 11 by 12 inches with a sliding glass. While the coldframe is stationery, these boxes may be moved from place to place and when not in use may be stored in basement or toolhouse. Often I set one on the bed which it is intended the plants shall occupy, prepare the 11 by 12 bit of soil as in the larger coldframe and sow the seed. When the enclosed seedlings are large enough to transplant by removing the frame there are the plants, bunched, ready at hand to be set, saving time and steps in bringing them.

After the early seelings are transplanted the little frames may be moved to some sequestered nook and sowed with seed for fall transplanting. Always locate them so they slant toward the south. When the accurate and ever ready slingshot of my neighbor's youngster had shattered the glass in two or three of these frames I tacked cheesecloth across the box and found it quite satisfactory. Then I seemed to need more frames than I possessed, so I knocked the bottoms out of some soap and starch boxes and tacked cheesecloth across them. The front edges of the cloth I fastened with thumb tacks or "pushpins," making it easy to raise the cloth and inspect the plants. Also they may be watered through the cloth with the fine spray of a watering pot, though I prefer using a sponge that just fits the hand, thus controlling the amount of water and avoiding an unpremeditated deluge.

At the grocery one may find boxes of all shapes and sizes to fit different available places. Have them shallow enough not to exclude the sunshine. A sheet of glass which has been removed from a picture frame or window because a corner was broken out will be serviceable. Find a box to fit it and make a cold frame of it; the broken corner won't matter. Lacking glass use cheesecloth.

These boxes make fine places for starting slips of house plants. Last summer I filled one with begonia slips, and in the fall I had fine plants to give improvident neighbors.

At present, March 3, my large cold frame has rows of snapdragons, scabiosa, parsley, hollyhocks, Canterbury bells, foxglove, forget-me-nots, &c., ready and waiting for transplanting time. Also there are rows of seeds planted last fall that will come up when spring calls them. I always gather the seeds of my choicest hardy phlox as soon as ripe in autumn and immediately sow them in the cold frame. A fine crop comes up the following spring. I've never had success with phlox seed saved until spring and then planted. The same with delphinium. They seem to lose all interest in life if kept over winter. Do your transplanting of seedlings on a cloudy day or late in the afternoon. With either a dibble or a slim trowel make a hole, fill it with water, and pass on to the next. When the water has sunk into the first hole place the plant therein, fill in with dirt and give it a little more water to settle the dirt. When the row, or bed, is all planted scatter some dry sand around each plant for a dust mulch and cover the plant with a quart berry basket for a shade. For three or four days attend carefully to this shading, as the hot sun soon withers and often kills plants before they are well established. Remove the baskets at night, replacing them in the morning. Remove them if there be a soft rain, but in case of a severe storm keep small plants covered, as the rain is apt to beat them down or wash them out of the ground. Save the berry baskets and put them in the basement in the fall, as they are invaluable at transplanting time.

Over certain plants which need winter protection I set a box rim, sometimes giving the enclosed plants a layer of manure or a covering of leaves, according to their requirements. I find in this locality first year hollyhocks must be protected. So I start them in a box rim, and in the fall fill up the rim loosely with leaves and tack a bit of wire netting across the top to prevent the leaves blowing away.

I never burden my memory with the details of garden arrangements. In a garden book I enter the list of cold frame seeds, plants and boxes, names and locations of bulbs, new plants, those which need dividing and moving, &c. This I do through summer and autumn, close the book and forget it till spring, when I take it out into the yard and call the roll. Some plants respond promptly and some are too sleepy to hear the call. The latter I give a few days of grace, but knowing just where they are hiding I avoid planting something else above their sleepy heads. This spring by referring to the book I shall know just where to find certain gypsy hardy chrysanthemums and shall know which are white and which are yellow and shall gather them into the fold with their brethren of the long chrysanthemum border where they belong.

INEZ BRETT SMITH, Ohio.

In November, 1916, a woman in a New England village where all food was brought from a distance and where grain sold at the highest price, bought eighty-five pullets. In the nine succeeding months she secured from them an income of $386.66 and had on hand eighty hens worth $80. The cost of feed, repairs and other expenses was $166.16, which, added to the first cost of the birds, $80, makes a total of $246.16, leaving a profit of $220.72, or nearly $3 per hen. Reports are desired from other poultrymen.

Dutch hoes and scuffle hoes are the same. Scuffle hoes are used for cleaning walks, cutting weeds and stirring the surface soil where shallow cultivation is given.

PROTECT TREES FROM RABBITS AND MICE.

Sod orchards are likely to be attacked by rabbits and mice that girdle the young trees, seriously injuring and sometimes killing them.

L. D. Jessaman of the Pennsylvania State Agricultural College recommends making a compact mound of earth six inches or more in height about the tree. Before mounding it is advisable to paint the trunk of the tree with a repellant of some kind, such as concentrated lime sulphur or the sludge left from the home manufacture of it.

As an additional precaution, especially against rabbits, a guard made of a short length of wire netting should be used. Fold the wire netting loosely around the tree before mounding, setting it a short distance below the surface of the ground to discourage the mice from burrowing under it.

As a protection against rabbits it should extend well up on the trunk of the tree. If rabbits only are feared the mounding is unnecessary, as a guard of cornstalks, burlap or some such material is effective.

Trapping the rabbits helps some, and rabbits make fine potpie. If rabbits cost $5 each rabbit potpie would probably be as popular as guinea hen in leading restaurants.

Poison baits may be used successfully sometimes. Farmers Bulletins 670 and 702 contain directions for mixing and use. These may be had free by applying to the Agriculture Department, Washington, D. C.

THE POSSIBILITIES OF BACK YARD POULTRY KEEPING.

According to the report of R. E. Jones of the Connecticut Agricultural College, the poutry industry is to-day in a very serious position. The heavy selling which began when the price of grain reached its present level is exhausting our New England flocks. Not more thon one-half the normal number of poultry remains. Suburban poultry keepers are almost entirely sold out. Many specialized poultry farms have sold out or are selling. The farm flocks are holding out best, due no doubt to the fact that home grown grain forms an important part of the ration.

Continued heavy selling of stock has kept the price of market poultry down, but the supply cannot long continue. Eggs have not increasd in comparison with other foodstuffs, but a higher level will obtain as soon as our present storage supply is exhausted. Patriotism is demanding more and more that poultry products be utilized to spare the red meats and other foods fit for export.

A small flock of poultry in the back yard can be made both a pleasure and a profit under present conditions, if proper care and management are given. If you are not keeping poultry in your back yard obtain a few birds and join the army of food producers.

The Feed Problem.

The feed problem can be satisfactorily taken care of with the back yard flock. The most frequent mistakes come from trying to keep more birds than the size of the family will warrant. The purchase of feed then becomes a burden, improper rations are used and production is unsatisfactory. The refuse from the average family will keep one hen for each mature individual, particularly where help is employed in the kitchen. While hens may be kept for a time on kitchen refuse alone a small feed of scratch grain and possibly a little mash mixed with boiled vegetable parings will keep the birds in better health and more than pay in production. One pound of grain a day with the refuse from a family of five should be enough to feed ten hens. Ready mixed scratch grain and mash are best with a small flock. Home mixing will pay with twenty-five or more hens.

How to Feed.

The grain should be scattered in the litter at least twice each day, and better three times or more. Only enough should be scattered during the day to make the birds exercise, most of the grain being fed about an hour before dark. If table refuse is plentiful mash is not needed; if not, mash may be fed with refuse at noon or kept before the birds in a hopper. Whatever ration is used always keep the birds hungry enough to make them active.

Green Food.

The waste from a small garden will help to keep down the feed cost. There is always something suitable for feeding poultry which would otherwise be thrown away. If there is sufficient room for special poultry crops, Swiss chard may be grown for summer green feed and mangles for winter green feed. A row of chard twenty-five feet long and a row of mangles fifty feet long should provide a year's supply. The mangles which are thinned out during the summer and the tops which are broken off in the fall make excellent green feed. Green feed of some kind should be provided every day in the year for best results.

Housing.

A poultry house for ten hens need not be very expensive. A piano box can be converted into a very satisfactory house. Packing boxes may be used to advantage. Dirt floors are suitable where the soil is light and well drained. A small run is desirable in summer, but not an absolute necessity. Good results are being obtained where birds have no run at all.

Good care and management will overcome the disadvantage of poor houses and cramped quarters. For those who prefer to build new houses, working plans for a 6 by 6 house suitable for ten hens will be given next Sunday. The cost of material for such a house will be about $12.

If building new or making over old houses the following rules may be helpful:

The requirements of any house are sunshine, fresh air, and freedom from draughts. A house must be low enough to be warm in winter and be provided with openings so that it may be kept cool in summer. Provide one square foot of cloth front to each six square feet of floor space. Provide one square foot of glass to each twelve square feet of floor space. Allow four square feet of floor space to each bird. Allow seven to nine inches of roost room for each bird, depending on the size.

Selection of Stock.

The matter of choosing a breed is largely a personal question. The American breeds, Rocks, Reds and Wyandottes, are the best general purpose breeds, being suitable for both eggs and meat. Leghorns are primarily an egg breed, but stand back yard conditions even better than the heavy breeds.

If purchasing birds insist that they be vigorous, well matured, and ready for production. Vigor and maturity in a pullet are indicated by a bright red comb, prominent eye, and deep, full body, showing both quality and capacity. It is worth while to pay a higher price and get pullets ready to lay rather than wait until spring for eggs. At the present time there should be no difficulty in obtaining pullets for starting back yard flocks. Pullets ready to lay are being offered at $1.50 and up. Assistance in locating stock will be gladly given.

It is probable that the back yard flock under average conditions can be more easily maintained by buying pullets each year and not attempting to rear chickens. Laying hens kept without male birds are quiet and do not become a nuisance to neighbors. Less complaints will be made if this rule is observed.

Possible Returns.

There are three possible returns worthy of consideration, from keeping a back yard flock. First: The satisfaction of responding to the call of patriotism for home production and food conservation. Second: The satisfaction of keeping and caring for live stock and the pleasure of having the best possible product for consumption. Third: The financial advantage which will come from turning cheap feed into high priced human foods.

The retail price of grain for the year will probably not be far from 4 cents a pound. Feeding one pound per day with kitchen refuse for ten hens would make 365 pounds, costing $14.60 per year. A production of 125 eggs per hen, which is very conservative for a back yard flock, at an average price of 4 cents each, would be worth $50 per year. The cost of the birds will be very little more than their value to eat at the end of the year with the possible exception of Leghorns, which are small. The cost of housing will not be very high except where new buildings are built and even then it should be only a small cost per year.

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