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GARDENING IN ELEMENTARY CITY SCHOOLS

I. Why Gardening Should be Introduced Into the Schools
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BY

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LETTER OF TRANSMITTAL.

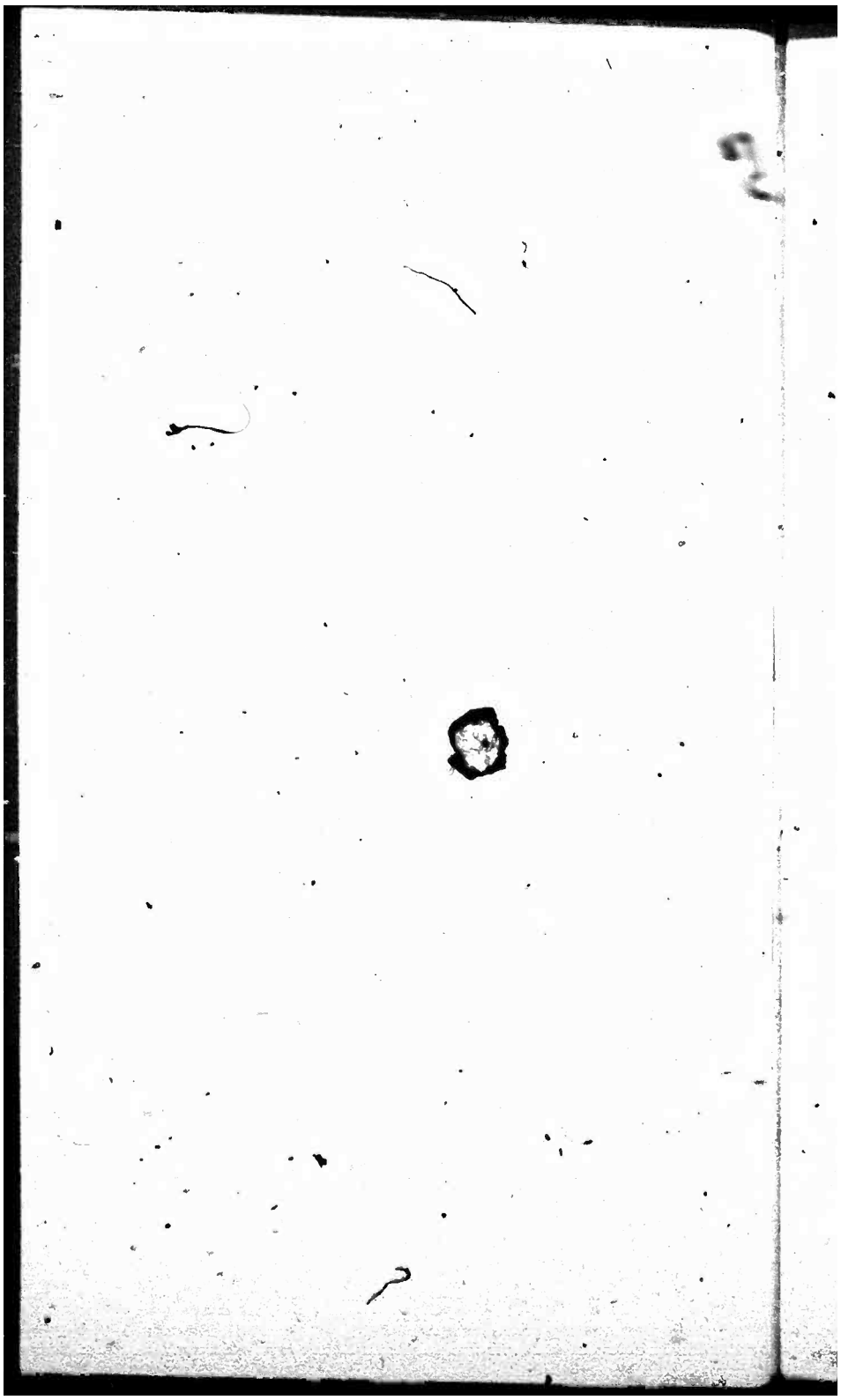
DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, March 3, 1916.

SIR: The widespread interest in gardening directed by the schools, especially in cities, suburban communities, and manufacturing districts, which interest has been greatly stimulated by the activities of this bureau, has created a demand for some comprehensive statement of the best means of organizing and directing this work, to the end that the largest possible educational and economic results may be obtained. To meet this demand the manuscript transmitted herewith has been prepared by Dr. C. D. Jarvis, chief of the School and Home Garden Division of this bureau. I recommend that the manuscript be published as a bulletin of the Bureau of Education.

Respectfully submitted.

P. P. CLAXTON,
Commissioner.

The SECRETARY OF THE INTERIOR.



INTRODUCTION.

This pamphlet has been prepared for the benefit of school officials and others who are interested in the promotion of gardening in the elementary schools of towns and cities. It attempts to show briefly how productive gardening contributes to the needs of the school and how the work may be organized and administered.

Like most recently accepted school subjects, gardening has been introduced largely as a result of outside pressure. The school has been remarkably responsive to public demand in this respect. This response on the part of the schools is becoming more acute, and it is a promising indication to find that the leading school administrators are recognizing gardening and are prepared to give it a place in the curriculum. From the standpoint of financial support, also, gardening has had to pass through the same troublous vicissitudes as music, manual training, drawing, and home economics. Like these, it has been financed and its value demonstrated largely by outside influence. School boards are just beginning to make provision for the financial support of this subject.

Like these earlier accepted subjects, gardening has been hampered also by the lack of efficient teachers. Its purposes have been misinterpreted, and it has been used as a means to an end rather than as a subject having real value in itself. The economic, or industrial, phases of the subject oftentimes have been supplanted entirely by the intellectual and esthetic phases. Teachers, also, have been too easily satisfied with the results of their efforts. They have been content with results which they believed to be phenomenal, but which, in the light of the best examples, fall far short of the real possibilities. Some recent and remarkable achievements of individuals and of groups of children working under competent instructors have done much to broaden the public vision concerning the possibilities of gardening, but it will be many years before the full value of the work can be demonstrated.

A knowledge of the conditions and factors operative with regard to earlier additions to the curriculum, however, should help in determining the kind of treatment that should be given any new aspirants for recognition. Administrators who would be abreast with the times in education will not wait, as formerly, for the slow recognition and evolution of a new and worthy school subject. They will

yield promptly to insistent outside demands and adjust their organization to meet them.

So far as gardening is concerned, most educational administrators believe that gardening is good for children and that it is a worthy school subject. In view of this, it would seem unnecessary, at this time, to set forth arguments to show why it should be introduced into the school, but there are a few who still need to be convinced of its value, and many who fail to realize its full significance.

While the present study is based more upon expressed opinions than upon a statistical inquiry, an attempt, nevertheless, has been made to gather some information regarding the status of gardening in the schools. A letter of inquiry was directed to superintendents of all cities of the country having a population of 5,000 or over. The replies were not amenable to definite classification, but much useful information has been gathered. In all, 820 replies were received. A keen interest in the subject was expressed by 647 superintendents, of whom 402 stated that garden work for children was encouraged by the school either independently or in cooperation with some local organization. Thirteen superintendents stated frankly that, under their peculiar conditions, gardening was not worth while. The remaining 160 failed to express themselves in any way, except to say that no garden work had been done.

Naturally, as with any pioneer activity, mistakes in organization have been made in gardening work. Many debatable questions, also, have arisen concerning methods of administration. The main purpose of this pamphlet, therefore, is to present a feasible plan for the promotion of gardening in the schools and to discuss contending issues regarding the administration of the work.

GARDENING IN ELEMENTARY CITY SCHOOLS.

I. WHY GARDENING SHOULD BE INTRODUCED INTO THE SCHOOLS.

NEED FOR ADJUSTMENT IN EDUCATION.

Most of the criticism of the school to-day is based upon its failure to meet the living needs of boys and girls. After full acknowledgment is made of the progress and achievements of the educational system, it is quite generally believed, even by school administrators themselves, that the traditional methods of training are not meeting effectively the present needs. The most serious charge in the indictment of the school is that it has not kept pace with the ever-changing industrial and social conditions. Before the days of marked centralization of population most of the industries were associated with the home, and boys and girls had an opportunity to share in the varied activities. This active participation in affairs is no longer possible with a large proportion of the younger population. The problem, therefore, is one of finding ways and means for bringing about adjustment in education to meet these new-born needs.

It is believed, and an attempt here is made to show, that there is no more available and effective way for bringing boys and girls into closer relationship with their environment and the affairs of life than that offered by productive gardening. In or about almost any city there may be found an abundance of land that may be used for this purpose. Within the limits of many cities there is sufficient land, if intensively cultivated, to supply the people with all the vegetables and a large portion of the fruit and flowers needed. For example, it is stated that the city of Minneapolis, before starting the vacant-lot gardening movement in 1911, had at least 5,000 acres in the form of vacant lots. A recent inquiry reveals that in Greater New York there are 186,000 vacant lots. The amount of land in the form of back yards probably would exceed these areas. This unused land, for economic reasons alone, should be brought under cultivation. The back yards that now are utilized are not producing returns equal to one-tenth of what they are capable.

To make the best use of this land for educational and productive purposes, trained and experienced teachers of gardening should be employed. Such teachers would instruct, directly, the children,

and, indirectly, the parents, with the result that in a few years a generation of capable gardeners would be developed. But the development of strong-bodied, efficient, and contented citizens is the real purpose and the main result of this work. With a common knowledge of the principles and possibilities of crop production, the wage earner of the future will not need to measure his income solely by the size of his pay envelope. He will consider, also, the productive capabilities of his garden plat and the extent to which it will reduce the cost of living. He will see the advantages of a suburban home, contrasted with the crowded and unwholesome tenement.

GARDENING AND DEMOCRACY IN EDUCATION.

There is no doubt that there is, the country over, a demand for something different in education. The demand is not only for better methods, but it is for a more democratic system—a system that will benefit a larger proportion of the people and benefit them more equally.

It is not necessary to bring in statistics to show the great inequality in education. It is enough to say that, as shown by Ayres,[1] only about half of the total enrollment of children in the schools reach the final elementary grade, and about 10 per cent reach the final year in high school.

In many schools, especially in the mill sections of the South, few or no children will be found in the seventh and eighth grades. The full significance of this condition is not realized until a visit has been made to the gates of the mills at closing time. Here is where most of the children of the community may be found. As the young faces appear through the gate these questions naturally present themselves: What would have been the effect of a few years more of schooling upon the life of this pleasant-faced girl or this intelligent-looking boy? Would not these girls and these boys have been able better to perform their duties as citizens and to have contributed more and better service to the community and the Nation if they had been given a definite training for some occupation before entering the mill? What would have been the cost and the interest on the investment to the Nation if these children could have been given two or three years' additional training for their life work? How will this dwarfing of body and mind affect future generations? Then, as the careers of these young people are followed up in the imagination, there comes a conviction that something should be done to insure a better training for the masses.

Why the parents lose interest.—During recent years, many impressive arguments to show why and how our school system should be

[1] Ayres, L. P. "Laggards in Our Schools," 1909, p. 31.

changed have been presented, and educators have declaimed tirelessly and written unceasingly concerning the industrial, agricultural, and commercial needs of education. The most convincing argument, however, for something better in education is found in the silent demand of the common people. The amazing number of children who leave school on or before reaching the legal age limit shows more effectively than anything else can that parents and children are not satisfied. The only reason that they do not call loudly for a change is because they do not know of anything better.

Many reasons for children quitting school have been brought out by investigation, but most of them, in the last analysis, may be grouped under the one head, namely, parents do not believe it is worth the effort and expense. They know that there are many opportunities in the industrial and commercial fields for children to learn to be self-supporting. They can not see how two or three years' more schooling of the common type will make any difference, for ultimately the child must adopt some other way to learn to earn.

It is not surprising, therefore, that parents permit their children to quit school upon approaching the legal age limit. As previously indicated, many parents are obliged to take their children from school because their wage-earning support is needed, but whatever their reason, it is quite certain that such action would be deferred for one, two, three, or four years, if their children should be provided with a wholesome, purposeful, and remunerative employment while attending school.

Why children lose interest.—Children, also, for reasons not hard to find, lose interest in school and bring pressure upon parents to allow them to quit. Parents, in their uncertainty regarding the value of further schooling of the common type, and in the stress of circumstances, are easily prevailed upon. If school work should be made sufficiently attractive to hold the interest of boys and girls, parents would be prevailed upon from the opposite standpoint, and many of them would be willing to make personal sacrifices to satisfy the whims of their children and to give them a better opportunity. School work therefore needs vitalizing. It needs something that will bring it into closer touch with the life of the child. Such contact not only makes it easier for children to acquire the tools of knowledge, but it may be the source of knowledge itself.

Many conscientious teachers apparently are sacrificing much time and effort in making it possible for the children in their charge to get experience in gardening. They believe that the effort is worth while in that it makes children alert and active, and makes teaching easier. Children can grasp principles of mathematics more readily when concrete problems are employed. They can compose more intelligently when the subject in hand is based upon their own experience.

Teachers claim, also, that children who are engaged in gardening are more easily governed.

It is not difficult to see how gardening may bountifully serve in the democratizing of education. With the application of intensive and modern methods, gardening may be made so profitable that parents will be able to keep their children in school longer and the desire of children to earn money shall be satisfied without their quitting school. Boys and girls can practice gardening while attending school, and earn as much, or nearly as much, money for the family as they can by giving up school and going to work at any of the common occupations of children. With such instruction provided by the schools, thousands of children should be able to get a high-school training who now find it beyond their reach.

GARDENING AND VOCATIONAL GUIDANCE.

According to the 1910 census, 95 per cent of the people of the United States are engaged in either agriculture, industrial work, commerce, or transportation. The present system of education offers little opportunity for children to gain any idea of the character or possibilities of these predominating occupations. If boys and girls are to select from any of the occupations for which our schools prepare them, they must choose one in an already overcrowded field.

Schools are just beginning to interest themselves in the future of children after leaving school. Some cities are now keeping a record of where children go and the nature of their occupations. Thousands of boys and girls leave school every year at 14 or 15 years of age. The quitting of school and starting out on life's duties, with the responsibilities of earning a living and contributing to the support of the family, is a serious undertaking, and probably is the most important phase in the whole career of the individual. Is it not remarkable, therefore, that the schools, whose duty it is to prepare people for their life work, have not given more attention to this vital step in the child's life?

Farmers are bewailing the fact that their sons and daughters are leaving the farms and taking up occupations in the city. They shower the blame for such an alarming tendency upon the school system. As a matter of fact, the combination of home and school training in the rural districts has been remarkably successful in preparing men and women for life, citizenship, and service in the city, and for this reason the young people of the country have found wonderful opportunities in the city. They have proved to be more resourceful, more self-reliant, and stronger in mind and body than the city youth who have not had the opportunity for getting that active experience afforded by life on the farm.

It is true that the lack of proper perspective and other causes have attracted young people to the city, but why should an attempt be made to head off this tendency? The city needs these people with their peculiar fitness for service. Who is prepared to say that all the boys and girls born in the country should remian there? It is just as absurd, and decidedly more cruel, to demand that all the children born in the city should be kept there. With the present system what chance is there to offset this trend cityward by directing some of the city youth to the country? What is there in the city schools that will help a boy in judging the value of agriculture as a vocation, and what is there to bring out natural tendencies and a desire to prepare for such a calling?

Gardening is one of the most intensive forms of agriculture. It demonstrates maximum possibilities from the cultivation of the soil, it provides an opportunity for conducting a large business with a small investment, and it involves the fundamental principles of crop production. For these reasons gardening in city back yards and vacant tracts of land, when properly managed and when adequate instruction is furnished, supplies a long-felt need in the matter of vocational guidance in one of the important occupations.

GARDENING DEVELOPS THRIFT AND INDUSTRY.

The question as to how to develop thrift and industry in city boys and girls is one that is frequently asked. It can not be done by exhortation or delineation. These attributes are the results of experience. They are acquired, not taught. They may be regarded as normal habits, for most children display them before they have acquired habits of extravagance and idleness. For this reason, it is important to encourage the development of these qualities at the most receptive age.

Some provision, therefore, should be made, either at home or school, or at both home and school, whereby children may get experience in the active affairs of life. This experience should be of such a nature that it will maintain the interest of children. It must be supplied in the form of a real and profitable enterprise. There must be a strong motive back of the enterprise, and usually the strongest motive from the standpoint of the child is a monetary one. Prizes have often been offered for this purpose, but these have only a temporary effect. The real result of achievement should be the motivating force, for this will last as long as the child continues to achieve.

Children should be taught the value of money as measured by work. Their duties and obligations to the home, the community, and the State should be demonstrated in a real, effective way. To

do this, some means for contributing to the support of the family should be placed within their reach. They should at least be taught that there is no place for people who are not willing to support themselves. Some form of productive enterprise, as suggested, should show also that a man's worth is measured largely by his ability to produce, and that the wealth and prosperity of the nation is mainly dependent upon the productive powers of its citizens.

The schools, of course, should not stop at the point where children have been trained and shown how to earn, but they should point out the common ways in which money is wasted and how it may be wisely expended. School children often spend enough for chewing gum, candy, soda water, cigarettes, moving pictures, and useless and unbecoming ornaments of dress, to pay the salary of their teachers. Assuming that an average of 5 cents per child per day is spent for these unnecessary items, the annual waste by all the children enrolled in the public and private schools in this country amounts to about four hundred million dollars.

The schools have a wonderful opportunity, therefore, to encourage economy and saving. Where children are able to make enough money to start a bank account, they are encouraged to save more, and much of the money that otherwise would be spent for unnecessaries would be added to the savings account. In one school in Chicago a record is kept of the earnings of the pupils during out-of-school hours, of the nature of the work, and of how the money is expended. The amount earned during the fiscal year ending July 1, 1915, was $5,853.61, of which $1,530.30 was earned from gardening. The money was disposed of as follows:

Put in bank	$2,015.10
Put in home banks	408.83
Given to parents	2,278.88
Expended for clothing	602.25
Pleasure	356.47
Outings	15.00
Machines	39.58
Miscellaneous	137.49

This is mentioned here especially to show the importance of keeping such records, and how they may be used in teaching thrift and industry.

There is no more available nor more suitable enterprise for the development of thrift and industry in children than that of intensive and profitable gardening. In the discussion relating to the promotion of the work, it is shown more clearly how gardening serves this useful purpose.

GARDENING AND THE CHILD-LABOR PROBLEM.

During recent years there has been much controversy and considerable legislative agitation over the question of child labor. Much has been accomplished, but at the same time a great deal of effort has been misdirected. Some people have the idea that all work is harmful to children. They fail to distinguish between work and labor and between wholesome and unwholesome employment. Wholesome work is good for boys and girls, and normally they joy in it. Commissioner Claxton, in speaking of the employment of children, has said: "We should not sweat them in the shops, grind them in the mills, nor bury them in the mines, but all children should learn to work."

More attention, therefore, should be given to the problem of providing for children a wholesome as well as a remunerative kind of employment. The schools should prepare the boys and girls for the earning of a living and demonstrate for them the possibilities in certain kinds of employment.

Some achievements.—Attention has been called recently to a few striking examples of individual achievement. Two sisters in Deer Lodge, Mont., made a net profit of $256.60 from the sale of fresh and canned vegetables. A girl in Iowa Falls, Iowa, cleared $114.05 from growing and canning tomatoes. A 17-year-old high-school boy of Marshalltown, Iowa, conducted a market-garden project in which his gross receipts amounted to $1,146.30. After deducting the amounts paid out for rent, labor, and supplies, and after charging up his own labor, he had a net profit of $768.75.

A 12-year-old Cleveland girl started gardening in 1909 and has made a splendid record during the past seven years. From a plat 52 feet square she has raised vegetables for the home and, in addition, has made a specialty of growing flowers, for which she has created a ready market. Her net receipts from flowers during the seven years are as follows: In 1909, $18.45; in 1910, $35.40; in 1911, $59.10; in 1912, $161.85; in 1913, $253.83; in 1914, $242.74; in 1915, $285.63. The total for seven years amounts to $1,057. With this money, she says: "I am able to buy all my schoolbooks, clothe myself, spend some for pleasure, and still add to my bank account."

A teacher in Mitchell, S. Dak., writes: "In one case three children in a family, where the mother is a widow, are earning enough to buy all of their clothes and help in the family expenses."

From these pioneer results it may be seen that gardening as an occupation for children may be made as remunerative as many of the "blind alley" occupations commonly followed. If school children are instructed in the art of gardening and the possibilities of such an occupation demonstrated to them, many will be directed to it either as a temporary or permanent means to a livelihood. In this it is a good substitute for hurtful child labor.

GARDENING UNITES HOME AND SCHOOL.

There is a growing belief that there should be closer cooperation between the school and the home in the matter of education. Both teacher and parent are often misunderstood by one or the other. Some administrative officers require their teachers to make periodic visits to the homes of the children. Visits that are made for no apparent reason are likely to be very formal, and result in nothing more than embarrassment for both teacher and parent. Home gardening, under the personal direction of a teacher, offers an easy and informal introduction to the home. It does more than that; it convinces the parents that the school has a personal interest in their children and that it is anxious to give them something of value in the earning of a living. In discussing the results of gardening in a New Jersey city school, the superintendent writes: "The school was hard to govern until gardening was introduced by a live teacher. This created a great change in the school and community."

GARDENING AND RECREATION.

No one doubts the need of wholesome exercise for school children. If playgrounds can not be provided and more or less supervision afforded, some other way should be found to engage the attention of the children during out-of-school hours. The evils attending and following idleness are well known, but thousands of our city children are still without any opportunity for play or other wholesome exercise. In children the spirit of play, or the acuteness of vigor, is natural, and nothing should hamper its development. Gardening often has been suggested as a substitute, and, from the standpoint of the city child, it is, in a large degree, play. It is more than play, however, and interest may be intensified by magnifying rather than minimizing the importance of the enterprise.

Recreation is needed for others than school children. Business and professional men appreciate the value of recreation, but oftentimes neglect it for lack of interest. If such men understood the principles of gardening, they would find sufficient incentive to exercise and would take much pleasure from work in the home garden during the evening hours.

GARDENING AND HEALTH.

Much is heard of open-air schools for anemic and tubercularly inclined children. If such schools are conducted on the same sit-still method that is the rule with normal children, these delicate boys and girls deserve a twofold sympathy. Such children need an opportunity for learning while they work. Garden work, supplemented by shopwork and home-making exercises, should supply this need.

It is not only the few conspicuously weak children that should receive attention. Many children in these days are predisposed to nervousness, and our quiescent method of training aggravates the trouble. If some interesting form of exercise or employment should be provided, fewer children would be forced to quit school at an early age on account of poor health, and fewer of them would be physical wrecks on the completion of their school careers. Gardening, again, is a most accessible means for supplying this need. Boys and girls who are not interested in outside games often are attracted by gardening. Such an occupation furnishes simultaneously both physical and mental exercise, and with it a compelling motive which is so essential in recreation for the young.

By the study and observation of the vital processes of plant reproduction, children solve for themselves the mysteries pertaining to sex hygiene. The practice of gardening also offers many opportunities for unconscious instruction in health preservation. Boys and girls may be shown how their strength may be conserved by the proper use and selection of tools and by the proper position of the various parts of the body and the body as a whole.

GARDENING AND MORALITY.

The boys and girls of the garden and canning clubs throughout the country have for their motto, "A training for the hand, the head, the heart, and the health." The choice of this motto was a happy one, for, as results have shown, these boys and girls have received a many-sided training. Such a motto is a fitting one for schools to adopt. If the schools do not train boys and girls from this quadruple standpoint, they are not living up to their opportunities.

In the making of useful citizens it is necessary that children be given a moral training, and the schools should assume this responsibility. Such a training is more easily and effectively furnished as an adjunct to other lines of effort. The great moral law, "Do unto others as you would they should do unto you," means little to a boy until he has learned this truth from experience. To tell a boy that "honesty is the best policy" is largely a waste of time unless the truth of the statement can be demonstrated. In the training of the heart, therefore, it is necessary to bring within the range of the child's experience an opportunity to test unconsciously the validity of these great moral laws. This opportunity should be presented early in the life of the child, or before habits of dishonesty have become fixed. The testing of the validity of these laws later in life is a dangerous undertaking and usually results in failure in business or a prison sentence.

Most of the boys and girls who are brought before the juvenile court are victims of idleness or poverty. It is remarkable that many of these young people who have gone wrong are the brightest and most capable boys and girls. The children who, from poverty, are tempted to steal are frequently the most ambitious. They are not satisfied with their conditions, and if shown a better opportunity probably would be the first to grasp it.

To meet their obligation the schools should provide some kind of experience that affords opportunities for lessons in business integrity and moral courage, and at the same time show children how they may, in one way, at least, earn an honest living. Gardening, when conducted on a profitable and business basis, meets this need better than anything else can. It not only supplies this need, but it gives children something wholesome to do and something wholesome to think about. While their hands and their minds are thus engaged, they are safe from many of the evils of idleness and the dangers of the contaminating and not infrequent vicious surroundings.

The association of boys and girls with growing plants, alone, will do much toward making better citizens. To make it possible for children to acquire a knowledge of the wonderful provisions of nature and the convincing manifestations of the existence of a supreme power is to exert a greater influence for good than is possible through any other agency. The following paragraph from a report by Miss Annie L. Burke, who has charge of gardening in the schools of Brockton, Mass., will furnish additional testimony on this point:

> I could give many illustrations of good results. I shall give but one. A boy of 12 was unruly, unmanageable, and his father conferred with the school principal about sending him to some corrective institution. He became interested in gardening and from that time has been a changed boy. He secured $11.50 in prizes at our September exhibit. A more enthusiastic lad it would be hard to find. His father and mother are very proud of him. Our gardening would have been well worth while had we but saved that one boy.

GARDENING AND THE JOY OF LIVING.

As Spencer has pointed out, education should fit a man to get the fullest enjoyment out of work and enable him to utilize his leisure time wisely and happily. Except for the satisfaction that comes from the ability to earn a living, to conserve the home and care for children, and to perform the duties of citizenship, there is no greater source of pleasure than that afforded by a knowledge of the phenomena and forces of nature. The schools, therefore, miss an opportunity and fail in an obligation if they do not provide means for children to get in close touch with nature. It is not enough that such an opportunity be afforded pupils in secondary schools and colleges, but it should be within the reach of the children in the grades.

Here, again, gardening offers a useful service. The teaching of nature study in schools has been advocated for a long time, but little progress has been made so far as the elementary schools are concerned. Nature study, to meet the demands of the younger children, needs motivating, and the practice of productive gardening supplies this need.

The ability to grow plants and to use them in home adornment is a great satisfaction to any man. If more people possessed such ability, and at the same time, appreciated the value of land for productive purposes, city homes would be more attractive, back yards more sanitary, and the dwellers more contented.

II. HOW GARDENING MAY BE INTRODUCED INTO THE SCHOOLS.

The slowness with which the schools have introduced gardening is not due so much to apathy as to the lack of ways and means for its promotion. The possibilities of gardening in city schools are so great that in some places remarkable strides have been made with very little effort. In many places the work has been started and carried on voluntarily by a few conscientious teachers. So firmly convinced are they of its value that they have made personal sacrifices in order that the children in their charge may get the benefits of this wholesome occupation. In other places, civic leagues, women's clubs, parent-teacher associations, chambers of commerce, and other organizations have encouraged the work, with varying degrees of success.

Many school boards within the past few years have made provision for gardening, and various methods for administering the work have been tried. As is usually the case in new undertakings, mistakes have been made. For the success of the movement there are too many conflicting recommendations, and progress will be slow until the promoters adopt a common plan and establish a number of demonstrations to serve as examples.

WHO SHOULD CONTROL CHILDREN'S GARDENS?

1. *The school.*—There is no doubt that the school is the logical organization for promoting gardening among children. It is dedicated to the complete training of children and should be able to conduct all educational activities more effectively and economically than any other organization. It is everybody's institution and should have the support of all the people.

2. *Other city departments.*—In many cities the garden work for children has been placed in charge of some department other than that of education. The work in some places is looked upon as little more than recreation and, in consequence, has been relegated to the department of public recreation. In other cities the ornamental, or civic improvement, idea seems to have dominated the garden activities, and as a result the work has been committed to the department of parks. Other cities have placed the work under the direction of a special commission. Where the work is under the control of any city department other than the school, it is likely to be used—and there are many cases where it has been used—to furnish political

capital. No opportunity like this should be afforded for the exploitation of children in the interests of politics.

There is need for close cooperation, however, between the departments of the city government as they affect the work of gardening. The street-cleaning department may render good service by way of contributing street sweepings. The department of parks may cooperate by supplying labor, teams, and tools for special emergencies. The health department also may contribute to the cause by requiring back yards and vacant lots to be cleaned up and in this way made available for gardening.

3. *Local organizations.*—There are many cities where gardening for children is under the control of one or more of the various local organizations, such as women's clubs, parent-teacher associations, civic leagues, chambers of commerce, and the like. These organizations have done much to demonstrate the value and possibilities of the work and to popularize the movement. The changing of the personnel and policies of local welfare and commercial organizations, however, is not conducive to permanency. Furthermore, such organizations usually depend wholly or partially upon the voluntary aid of their members, and children are often swamped with advice which, although well intended, is often more bewildering than helpful.

These local organizations usually are conscious of their shortcomings and are promoting the work because they believe in it and because the school has not grasped its opportunity in this direction. In many places the work has been voluntarily turned over to the school as soon as the school was prepared to handle the work. Indeed, many of the best examples of gardening effort are those that were started by local organizations and later turned over to the school.

These organizations can be of great service to the school, not only in bringing about a sentiment favorable to the work, but also by way of supplying a market for the produce raised by the children. Their efforts in this direction may consist in providing local public markets for children's products and by purchasing from boys and girls their supplies of vegetables, fruits, and flowers.

4. *Corporations.*—Private concerns and corporations often have devoted much effort and expense to the promotion of gardening among children. This action has been prompted, no doubt, both by altruistic interest in the welfare of the families of their employees and by the more selfish interest in the profits of the company concerned. The gardens cultivated by the children under skillful direction contribute much to the education of the children, to the living of the workmen's families, and to the attractiveness of their homes. At the same time they tend to make the employees more content with their work and wages.

The efforts of these concerns have been worth while, both from the humanitarian and economic standpoints. Even greater results, however, should be attained if the work were in closer cooperation with the school. Some concerns have seen the necessity for this, and have provided the local schools with facilities for doing this work. In some cases the corporations maintain independent schools, of which gardening forms a part.

KINDS OF GARDENS.

Confusion of names.—There is considerable confusion of names applied to children's gardens, and there seems to be an extremely faint line of distinction between the various kinds. For discussion here it is sufficient to recognize two main groups: First, those located upon school grounds, or land controlled by the school, and known as "school gardens"; and second, those that are located on the home lot or land controlled by the home, and known as "home gardens."

Some difference of opinion prevails at the present time over the respective merits of these two types of gardens, and as to whether one or both types should be maintained. In reality, there is not so much difference between the types as between the purposes each is intended to serve. There is a place for both types of gardens, as they are generally understood. There are conditions where one is entirely impracticable, and also conditions where the other fails to satisfy the demand.

The school garden.—This term has been applied to a great many kinds of enterprise, and, in its broadest sense, may include all forms of children's gardens under school direction or encouragement. In many cases the term has been applied even to gardens over which the school exercises no control. It is sometimes applied to small groups of gardens in vacant lots, and even to individual back-yard gardens, where they are under the direction of the school. In recent controversies it has been considered in a more restricted sense, meaning an aggregation of individual plat gardens located on the school grounds or on property controlled by the school.

There is another type of school garden which is sometimes called the "school farm" and which is quite popular in certain sections, especially in the Middle West. This kind of a garden is either located on the school grounds or on land near by. It is frequently found in connection with the high schools of smaller towns and the elementary rural schools. It differs from the regular school garden especially in that, instead of providing independent projects, the children work together on a single enterprise, the returns being used for certain school activities, or divided among the pupils who share in the work.

Such gardens are often used as model gardens or demonstration farms. Where the aim is to demonstrate fundamental principles, methods of soil management, possibilities of little-known crops, and

the like, they perform a useful service; but when an attempt is made to conduct the "farm" as a model or a pattern for other people to follow it usually fails to justify its existence. These consolidated gardens sometimes assume the nature of a field museum or an agricultural botanic garden. When they are well cared for, they serve a useful purpose in familiarizing pupils with the various forms of economic plants.

Where pupils work together in this way under the direction of a good leader, much good is accomplished. Too frequently, however, there is a tendency to shirk responsibility and a large share of the work must be shouldered by a few of the more conscientious pupils. In general, the plan lacks the compelling motive characteristic of the independent, businesslike, individual project.

In most cases the school-garden project is financed wholly or in part from public funds or from voluntary contributions. In this respect, and also in the smaller size of the individual gardens, the scheme differs from the home-garden plan. There are, however, all gradations of form between the school garden and the home garden.

The school garden, in its restricted meaning, is especially adapted to the congested areas of large cities, where available land is scarce. In many cases it is the only solution to the problem of providing garden plats to the children of the neighborhood. So scarce is the land in some places that it becomes necessary to assign the children to plats not exceeding 10 or 12 square feet in area. From such plats children may get a great deal of pleasure and profit, but they can not get a fair idea of the possibilities of gardening or the benefits following the promotion of an independent business enterprise.

A few cities still adhere to this type of enterprise, even though back yards and vacant lots are within reach of most of their children. The tendency at the present time, however, is to adopt the home-garden plan wherever it is practicable. There is a tendency, also, to assign larger plats to children and to conduct them on about the same basis as the home garden. Some schools have both types of gardens, those at the school being used mostly as training plats. This usually works well, but requires more supervision to get the maximum results. A much better plan consists in the use of the plats at school for the children who have no land at home, and to regard them as home plats, giving the individual children full responsibility for their administration.

Some people have felt that there should be at least one garden at the school to serve as a model for the children to imitate. So many things can happen to a model garden, and so often do happen, that it generally fails to demonstrate the principles intended. A demonstration, to serve its purpose, should be under normal conditions, and the best kind of a demonstration is a successful child's garden.

A plat on the school grounds, where boys and girls may be given practice in spading, raking, hoeing, weeding, thinning, training, pruning, and the like, is very desirable, but such practice should not relieve the instructor of the necessity for home visitations and the furnishing of instruction in the child's own garden.

Some of the early promoters of the school-garden idea, on account of the success of their efforts, have become so wedded to the plan that it is difficult for them to see the necessity for making a change. Judging from a recent investigation, there seems to be a gradual shifting from the old point of view to the new. Twenty-seven city-school superintendents who have been promoting the work along school-garden lines declare that, for various reasons, the plan has been abandoned, and a system of home gardens substituted in its place. The following extracts from the correspondence of some of these superintendents are illuminating:

From Minnesota.—The public schools of this city have maintained a school garden, but have decided to give it up, because the results are not practical. We favor home gardens, where all the material raised may be utilized by the family. On the school garden tracts it was impossible to prevent marauding by neighbors, and it was also difficult to have the children work there in the summer days when school was not in session.

From Massachusetts.—Our experience with school gardens has not been successful. We have found that such gardens have invariably suffered from marauders. We have had good success, however, with home gardens, and it is to these that I feel that we must devote our energies in the future.

From Wisconsin.—Many gardens, particularly flower gardens, were planted. But the number who kept up the work during the summer vacation and obtained results of which they were proud was small. Hence, after a few years the attempt was discontinued. I can see now that the large part of the difficulty lay in the fact that we did not have help enough and, particularly, we had no one person with sufficient time as well as information to devote to it.

The arguments usually presented in favor of gardens of this type are:

1. Because of their accessibility they may be easily supervised.
2. The may be idealized, and thus serve as compelling examples to children.
3. They serve as school laboratories for studies relating to nature and life.

The chief disadvantages of the plan, compared with the home-garden method, are:

1. The children do not have sufficient responsibility and therefore fail to get the benefits that accrue from the successful and independent completion of a real business enterprise. Projects backed by the school and on land controlled by the school can not fully meet these requirements. Self-reliance should be one of the conspicuous results of garden work, and this comes only from independent effort and achievement.

A SMALL-PLAT GARDEN AT A NEW YORK PUBLIC SCHOOL.

2. Because of the limited space usually allotted to children, they are not able to raise enough produce to affect the family incomes materially nor to gain a fair idea of the possibilities in earning a living from the soil.

3. The school garden does not furnish the easy and informal introduction to the home and does not so effectively bring about the full sympathy of the parents that is so conspicuous in home-garden work.

4. The school-garden work calls the children away from home and often furnishes an excuse for them to get to undesirable places of amusement.

5. Under this system it is harder to protect the gardens from marauders.

6. The plan is more expensive, especially where the cost of tools, fencing, soil preparation, fertilization, etc., is borne by the school.

7. With this plan it is harder to administer the work during summer vacation.

8. With school gardens the children are usually limited to stated intervals for the performance of their garden work. With home gardens they may work at any time.

9. The plan does not permit of the freedom of action afforded by the home garden, and therefore makes it more difficult to maintain interest.

10. With gardens that are not controlled by the home there is no incentive for the child to invest his earnings in permanent improvements and wait for returns. City people are too much inclined to demand immediate returns and should be taught that long-time investments are usually more profitable.

11. School-gardening practice does not contribute so effectively to the improvement of home surroundings as that of home gardening.

It should not be understood that this is an attempt to discredit the earnest efforts of those engaged in strictly school-garden work. To them, as pioneers, much credit is due. The school garden has created sentiment in favor of the whole movement, and most people, even those who are promoting school gardens, are now encouraging children to make home gardens in response to their school instruction. The school garden has done much for the child, but the home garden may be made to contribute all that the school garden can contribute and more.

The home garden.—This term in its strictest sense embraces those gardens that are maintained by children at their own homes. More lately it has come to include all independently operated garden enterprises, whether on the home lot or on some vacant tracts of land in the neighborhood. It differs from the school garden mainly in that it is located on land over which the school has no control, and in that the school contributes nothing to its support. The home garden

may be, and usually is, of greater dimensions than the individual plat in the school garden. In discussing the advantages of the two systems it is necessary to keep these differences in mind.

The school-directed home garden is just as much a school garden as the one located on school grounds, but, for fear of confusion, it is usually designated as the "home garden" or the "school-home garden." Even though the gardens are located on the school property, it would seem advisable to regard them as home gardens, and to restrict their assignments to children who do not have sufficient land at home.

There are many places where, because of the absence of back yards, home gardening is out of the question, but most cities generally have better opportunities in this direction than are believed to be the case. Towns would do well to make a survey to ascertain their resources in gardening possibilities. Such a survey of the individual homes in any particular neighborhood may be made with little effort and at low expense.[1] A back yard 10 feet by 25 feet, containing a fair grade of garden soil, may produce, under favorable conditions, $20 worth of vegetables and small fruits. Eight cents per square foot is used as a basis in making this estimate. Many schoolboys have exceeded this figure, so that in making surveys it is usually safe to estimate the possibilities on this basis. It should be remembered, however, that such returns are not possible unless provision is made for adequate instruction and supervision.

By utilizing for this purpose the home back yards and the near-by vacant lots, a larger number of children may be accommodated and each child may be given a larger plat than is usually available in a school garden. The home plat is more easily protected from marauders and is more likely to be properly cared for during the entire season.

Where children perform garden work at home, the parents are made to feel that they have a part in the instruction of the children, and they actually can assist them in various ways. Some instructors have insisted that the parents refrain from helping their children, but this is a mistake, for they lose in this way an unusual opportunity to develop a hearty spirit of companionship and cooperation between parent and child. Too many children fail to realize their responsibility to the family as a whole, and it is a significant thing, therefore, to see a whole family working joyously together for their common good.

Many parents can not understand why there should be a garden at the school when there is abundant land at home and in the immediate neighborhood that should be utilized. Fathers and mothers

[1] The Bureau of Education, under certain restrictions, will supply forms for the purpose of making surveys of gardening possibilities.

of foreign birth, probably because they appreciate the companionship of their children, seem to resent the idea of having a garden away from home. An Illinois city superintendent has called attention to this fact. He says:

> We have done nothing in the way of actual school gardening as such. Our children, however, have been instructed by the teachers in the simple elements of agriculture and gardening. It has been done at home, and for the reason that the parents, especially those that have come recently from Europe, can not quite appreciate our point of view in having a school garden. They are glad for the interest we take in having the gardening done at the homes of the children. They get more benefit and it helps to improve the environment of the homes.

Cooperative gardens.—Sometimes gardens are operated on a self-supporting cooperative basis. A sum of money sufficient to pay for the rent of land, cost of fertilizers and other supplies, and the necessary teamwork, is borrowed from one or more interested citizens. A group of boys enter into a cooperative agreement, and each assumes the responsibility for the return of his share of the money, with interest. At the end of the season the interest is paid and the principal is retained as a permanent fund for promoting the work each year.

This plan is based on home-garden principles, for it is financed independently of the school. It permits a change of personnel each year. The land is divided up into as many units as there are candidates for the work. The boys work their land independently, but cooperate in the financing of the enterprise, in the preparation of the land, in the buying of supplies, and in the selling of the crops. This is the best kind of garden work for older boys, and especially for those of high-school age.

INSTRUCTION AND SUPERVISION.

Experience has shown that it is not enough to encourage children to make gardens or to depend upon voluntary supervision of the work. It is not enough to pass around some seeds or plants and tell the children to plant them, or even to tell them how to plant them. Such a practice probably is worth while, and undoubtedly has made it possible for children to get a great deal of pleasure and wholesome exercise that otherwise would not have been provided. The children who have profited most from such meager efforts on the part of the school or other local organization are those who have had the benefit of parental instruction.

Children need experience in gardening, but, to get the most from the opportunity, they should be permitted to undertake and to carry to a satisfactory conclusion a well-rounded business enterprise. To insure a satisfactory conclusion, adequate instruction and supervision must be provided. Instruction should be given in the most

approved methods of gardening, the methods of financing a business enterprise, the methods of marketing and distributing the products, and the proper use of the proceeds of such an enterprise.

Some people have doubted the advisability of emphasizing the economic side of gardening. They have said that, by encouraging a serious business enterprise, there is danger of commercializing the children's efforts. This kind of criticism usually comes from those who never have had to consider seriously the necessity for earning a living, which, for most people, is a vital problem. To give boys and girls experience and training that may be used as an immediate means to a livelihood is not the primary object of gardening in school. It is a very valuable corollary, however, in the turning out of strong-bodied, self-reliant, and useful citizens. Experience has shown that the educational and social benefits following the work are in exact proportion to the financial success of the individual enterprise. In like manner, the gardening efforts of any school are best measured by the dollars-and-cents method.

The teacher of gardening.—It is plain, from what has been said, that teachers trained and skilled in gardening should be provided. For this work, like other new lines of endeavor, the securing of qualified teachers constitutes an important part of the program. The movement will flourish as teachers become available, and this promises a comparatively slow development.

In the selection of teachers for this work it is of first importance that the teachers have the proper attitude toward the work and that they have broad views regarding the possibilities. Many teachers fail to grasp the full meaning of the work and are too easily satisfied with results. A teacher who knows very little about gardening but who knows children, and has the proper point of view, is more likely to make a success of the undertaking than one with elaborate garden training but with narrow or distorted views of the possibilities. The problem of obtaining teachers should be greatly simplified when the children who have had good school experience in the work finally become teachers.

The number of children for each teacher.—The number of children that a teacher can instruct properly is dependent upon the experience and administrative ability of the teacher, the previous training of the children, the accessibility of the individual gardens, and the peculiar local conditions. One of the most serious mistakes made in past efforts has been the assignment of too many children to an individual teacher. Under such conditions the teacher must spend too much time in the office writing instructions when he is needed in the gardens.

Undoubtedly one teacher, even under the most favorable conditions, can not direct effectively the work of more than 200 chil-

dren. In the first year's effort, when few, if any, of the children have had garden experience, 100 children should be the maximum number. In subsequent years, when some of the experienced children will not only require less attention but will be able to assist in the work, a good teacher may handle as many as 200 gardens.

Teacher engaged for 12 months.—Ideally, the gardening instructor should be an extra or special teacher, devoting his time during the winter to giving instruction in gardening, agriculture, elementary science, nature study, or the like; and during the summer, to the direction of the practical garden work. He should be engaged on a 12-month basis, with provision, if desired, for a short vacation during the winter. A good many conscientious efforts at gardening work have failed from want of supervision during summer vacation.

Some schools engage a special garden teacher only for a few months during the summer. This practice gives fairly good results, but falls far short of giving complete satisfaction. Commercial gardening is very much of an all-year occupation, and the teachers who are getting best results are those who are "on the job" 12 months of the year.

Making use of the regular grade teacher.—Until public sentiment demands a special garden instructor and until funds are made available for the purpose, many schools must carry on the work largely through the efforts of their present staff. While there are many examples of success from such a plan, it must be regarded very much as a substitute or temporary arrangement. Where this plan has worked with any degree of satisfaction, there has been one teacher designated as the director of the work. She has been selected, in the first place, on account of her special fitness for the position. Sometimes she has only a meager knowledge of garden operations. She succeeds, usually, in proportion to her knowledge of the subject and experience in the work. In most cases, such teachers are not familiar with the possibilities of intensive gardening and are too easily satisfied with results.

In the early spring the chosen teacher works in cooperation with the other teachers, and, as the planting season approaches, she devotes her afternoons and Saturdays to personal instruction and direction of the work in the gardens. During the summer vacation she gives her whole attention to the work in the individual gardens. After school opens in the fall she continues to direct the work during out-of-school hours.

Such a teacher is usually paid from two to three hundred dollars per year more than the regular teachers. She should be engaged at this salary on a 12-month basis, so that she will understand that the additional remuneration is not only for the extra service

during the summer months but that of every month of the year. If she conducts the work as it should be conducted, she must be on duty about double the time required of the regular teachers. It is a strenuous undertaking for grade teachers, and, but for the wholesome out-of-door employment, few of them would be able to bear the strain.

The Pittsburgh plan.—This plan has been put into operation in a few cities and is worthy of comment here. It is especially adapted to large cities like Pittsburgh, where it has been worked out to the best advantage. It consists of the employment of a practical man as director, and with his aid teachers of desirable qualifications are selected in their respective schools to serve as garden teachers. They have their vacation commencing the 1st of February, or the beginning of the second semester. Substitute teachers take charge of their rooms until the close of the school year. When the regular teachers have returned from their vacation their whole time is devoted to the promotion of garden work in their respective schools.

In order to make it worth while for teachers to prepare for this work the maximum salary for garden teachers is $250 higher than that of the regular teachers. This additional salary, however, is given in the form of $50 increases for five years. With five years' experience in the work under the direction of the general supervisor, and in consideration of the extra service demanded, they are worth more as teachers.

The supporters of the plan claim that it works well. They call attention to an incidental advantage of the plan in the opportunity afforded for breaking in new teachers. The substitute teachers are obtained at low expense, and as a rule take care of the vacancies in the teaching staff.

The chief weakness of the plan, as it usually works out, is that the teachers do not return from their vacation until April 1, and in most sections of the country this is too late to make the necessary preliminary preparations for the summer's campaign. The use of hotbeds and cold frames in the production of early crops is an important feature of successful garden work. With this one objectionable feature eliminated, the plan offers remarkable possibilities.

Training teachers.—The teacher of gardening should be one who has had practical experience in gardening and who knows the possibilities. He should, of course, be in sympathy with the work from its broadest aspect. He should have had a general training in elementary science, and some technical training in plant physiology, in soils and soil management, and in the growing of vegetables, fruits, and flowers. Some knowledge, also, of the fundamentals of landscape treatment, as applied to home adornment, and the materials used in

the work, would be very desirable. He should also be trained in the administration of school home gardening.

It will be several years before many teachers with such qualifications will be available. When there is a more conspicuous demand for trained teachers for gardening, it may be expected that the normal schools and colleges will plan their courses to meet the requirements. In the meantime, cities would do well to make provision for the training of their own teachers. Unless the teacher-training schools adopt a system of training involving actual participation in the work of gardening and in the actual direction of garden work with children, they will not meet the requirements.[1]

How cities may train their own teachers.—Any city with three or more schools should find it desirable to provide for the training of its own teachers for garden work. A competent gardening instructor may be engaged to train teachers while in active service. This instructor should select a few of the best qualified teachers on the present staff and instruct them in the practical operations of gardening and in the methods of directing garden work with the children. He should not attempt during the first year to train more than two or three teachers, and the work should be restricted to certain schools. The next year he may select one or two additional teachers, and so on, till enough have been trained to carry on the work throughout the city. Two or more teachers, if necessary, may be trained for each of the larger schools. His work thereafter should consist in preparing teachers to fill vacancies and in instructing and directing all the teachers of the gardening staff.

Such a plan may safely be followed by many cities, though care should be taken not to abuse it. The chief danger lies in the temptation to undertake too much. Some superintendents may feel that they should start the work immediately in every school. Such an effort in a large city surely would fail. Some cities have already demonstrated the uselessness of trying to do effective gardening by thinly spreading out the efforts of one man.

What grades shall receive instruction.—With the present limited facilities of most cities, it is best, probably, to start gardening with the pupils of the fifth grade. A number of the more advanced children of the fourth grade also may be able to carry on independent garden projects. Gardening for the lower grades, and also for the kindergarten, is certainly worth while, but, with these, the methods and purposes of the work are different. By starting with the fifth grade most children, sooner or later, will have an opportunity for instruction.

[1] School Home-garden Circular No. 2, of the Bureau of Education, suggests an outline on the project plan for the use of teacher-training schools.

When facilities do not permit adequate instruction of all children of the garden age, rather than to give insufficient instruction to many it is better to limit the work to certain grades. In some schools the work has been restricted to the two upper grades, but this practice is likely to eliminate some children who quit school early. It has been shown also that habits of industry are more easily acquired at the fifth-grade age, and, furthermore, the interest of children is more easily obtained and preserved when the work is started in the lower grades. It would seem desirable, therefore, to eliminate the eighth rather than the fifth grade. In actual practice, the children who have had instruction from the fifth grade up through the seventh will demand very little personal direction, and oftentimes may render efficient service in directing the work of the younger children.

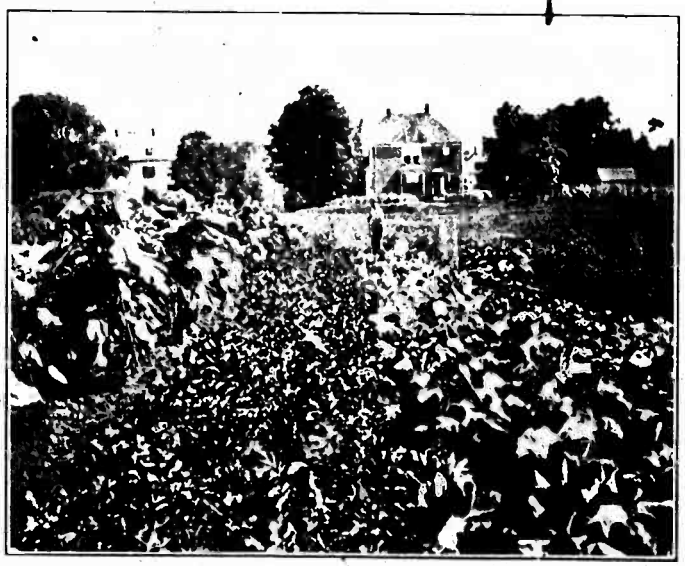
It may be seen that the maximum results should not be expected the first, second, or even the third year of the gardening effort. It should be kept in mind that this is a progressive process. After children have received instruction and direction for three or four consecutive years they become fairly proficient in the art of gardening, and the varied results of the work are proportionately more pronounced.

The school-unit plan.—In an eight-room school, a familiar unit, there are usually not more than about 300 children. Since not more than half of these children will be of the garden age, such a school should supply about the right number for one teacher to instruct successfully in garden work. The larger school, therefore, shall require more than one garden teacher.

It is of utmost importance that the school-unit plan of organizing the work be followed. Assuming that a teacher should be supplied for each group of one or two hundred children of the garden age, the sooner such a plan of organization is started the sooner will it be perfected. If only sufficient funds are available for the employment of one or two teachers, they should be provided for certain schools, giving them the direction of no more work than they can carry through on a profitable and satisfactory basis. Unless teachers are restricted in their field of operation and are given an opportunity for doing the work well under normal conditions, the people will never have an opportunity for seeing the work conducted along proper lines, and consequently are likely to be satisfied with mediocre results.

Many cities have started their organization in the wrong way and then find it difficult to get anything better. They engage one general supervisor to cover the whole school system. They discover later that it is too much of a job for one man, so instead of restricting his field they give him an assistant. But they find that it is too much of a job for two men and that they are not much

TOWN CHILDREN WHO HAVE BEEN BROUGHT TO THE COUNTRY TO FIND ROOM FOR GARDENING, FERGUS FALLS, MINN.



ONE-FOURTH OF AN ACRE AT WALTHAM, MASS., CULTIVATED BY A SCHOOLBOY.

Note the long straight rows.

better off than they were before. In other words, they have started their organization at the wrong end. Even now they would do well to limit the field of the supervisor to a few schools, as previously suggested, and in this way give him an opportunity to train a few teachers for efficient service.

It is proper and very desirable for a city to engage a supervisor of gardening, but it should either provide some teachers for him to supervise or require him to train some for the purpose. The experience of a southern city will show the importance of restricted effort. A few years ago it employed a man as gardening director in one of its schools. He made such a phenomenal success the first year that the people requested that gardening instruction be provided for the other schools. The school board, instead of procuring a similar teacher for each of the other schools, requested their man to spread his efforts over the whole city. As a result, the work spread rapidly, but soon became indefinite and then failed.

FINANCING THE WORK.

Schools should provide funds.—After the adoption of a plan, the next problem is to procure the necessary funds for the promotion of the work. In many cases, especially where the school population has been rapidly increasing, this is a serious problem. Unlike many other subjects that recently have claimed recognition by the schools, gardening is remarkably inexpensive, and if properly directed it should contribute to the wealth of the community. In some cases it has been shown that for every $1 invested in the employment of a gardening instructor $20 worth of vegetables have been produced by the children. In this connection it should be remembered that much of the land that would be used for the purpose is waste land, and this, coupled with the unused labor of the children, means a clear gain to the community.

As previously intimated, there should be no attempt made to start the work throughout the whole school system. By starting it in one school at a time and doing the work well, it is more likely to be called for by the other schools, and in this way hasten the complete organization of the work. The experience of an eastern city superintendent may serve to illustrate this point. He was one of the first to realize the importance of gardening in the schools, and 12 years ago he asked his board for an appropriation of $12,000 for the purpose of employing a teacher of gardening in each of his elementary schools. He renewed his request every year since that time, but no money yet has been made available. If, at first, he had asked for $300 to start the work in one school, he probably would have had the whole system organized on an efficient basis by this

time. It is usually necessary to demonstrate the value of new lines before large appropriations can be obtained.

For a system of home gardens there should be very little, if any, expense except for the salary of the instructor. Where school gardens are maintained, additional appropriations usually are necessary for tools, fencing, fertilizers, and preparation of land. Where one of the regular grade teachers is to be given charge of the garden work, the expense should not exceed three or four hundred dollars, this being the amount necessary to remunerate the teacher for her extra service. Where a special teacher is demanded, the expense would be about $1,500, for such a position calls for a special training as well as additional service. Where it is the intention to engage an experienced man to train teachers, the expense would be still greater in the beginning. Eventually, however, this plan should prove to be the most economical, especially for the larger cities. In this case, the expense would be from $1,500 to $3,000 per year for the instructor, and from $100 to $300 for each teacher selected.

When the proposition has been presented properly to school boards, they are usually quick to see the importance of providing for the work. Being unfamiliar with the requirements, and in their efforts to disburse their funds economically, they are likely to, and often do, place hampering restrictions on their appropriations. In many cases only sufficient money has been made available to arouse considerable enthusiasm among the children. Such efforts usually have a detrimental effect upon subsequent and serious attempts at gardening. Children who have been persuaded to plant seeds with the hope of getting large returns often have been disappointed, so that efforts to interest them again have failed.

Cooperation with local organizations.—Where funds have not been provided by the school boards, it often has been possible to interest some local organization to the extent of contributing enough money to engage a teacher for one school and to make a demonstration of the possibilities. Such a demonstration, if carefully conducted, should convince the school board and the general public that the work is worth while.

Chambers of commerce and boards of trade should be, and usually are, interested in a proposition that means so much educationally, socially, and economically. It is easy for business men to see how such an undertaking should affect the prosperity of the community. Since many children under competent direction have been able to produce over $100 each from their garden enterprises, it is safe to say that the children in and above the fifth grade should produce an average of $25 worth of vegetables, small fruits, and flowers. Knowing the number of children, and knowing that there is abundant land avail-

able, it is easy to estimate what gardening in the schools means economically, to any community.

Whatever the source of the funds, the work should be centered at the school, and the superintendent, of course, should be the administrative head. Local organizations who wish to assist in the promotion of gardening should be shown the necessity for centralizing the work. Any funds contributed should be turned over to the board of education without hampering restrictions. If a local organization wishes to make a normal and effective demonstration of the work and is prepared to employ a teacher for the purpose, it should turn the teacher over to the school for direction.

III. HOW GARDENING MAY BE PROMOTED BY THE SCHOOLS.

To present a suggestive program for the use of those in immediate charge of gardening is the purpose of the following discussion. Only an outline is presented, and no attempt is made to give instruction on the various cultural questions relating to the subject. The recommendations are intended for schools employing the home-garden method, in its broadest sense. This includes gardening on the school grounds, where it forms a part of the home-garden system and where the individual plats are regarded as home gardens or independent projects. A strictly school-garden program may need some modification, especially with regard to preparing the land and marketing the produce, but even in these matters the recommendations are quite similar. The program is planned, also, for schools where a teacher is given charge of a limited number of children, ranging from 100 to 200.

PRELIMINARY SURVEY.

It is very desirable, especially in the initial stages of the work, to make a survey of the district to show the opportunities for gardening. Such a preliminary survey should prove useful in emphasizing the need for gardening, and, coupled with a subsequent survey showing the results, in justifying the extension of the work to other parts of the city. This survey should show especially the amount of land available for gardening, the character of the soil, the amount of land used for gardening, the approximate value of the products raised, and an estimated value of the products that might be grown. It does not require an extensive knowledge of gardening to make such a survey, but it should be made by means of a house-to-house canvass, rather than by sending the blank forms home with the children.

It is very desirable that the survey be made by the teacher who shall have charge of the work. This should serve as an introduction to the homes and furnish an opportunity to get acquainted with the parents. It should be a good time, also, to arrange for the cooperation of the parents, to settle upon the amount of land to be set apart for the children, and to make definite arrangements for financing the garden project. The teacher at this time should explain to the parents that, while there is no objection to their assisting the children with the heavier work, there is great danger in

doing too much for them. The parents should be given to understand that the responsibility for the project must rest with the child.

Charting the district.—While making the preliminary survey it is well to use a map on which to indicate the location of available land for gardening, both in back yards and in vacant lots. Real estate dealers often have maps that are suited admirably to the purpose, but these are somewhat expensive. If these are not available, the making of such maps is not a difficult task. If no other mark is employed, the letter "V" may be used to distinguish the vacant lots from those that are occupied. For convenience, each lot should be given a number, and in this way children's gardens may be located more readily. The regular street numbers may be used, but it is difficult in some cases to obtain the correct numbers of vacant lots.

The district map may be mounted on sheet cork or corrugated paper so that tacks with different colored heads may be used to indicate the gardens of the various grades. Two such maps may be used advantageously to show progress in the utilization of waste land. On one of these maps the land under cultivation at the time the preliminary survey was made may be indicated by color, and on the other the reclaimed areas may be added from year to year.

PROCURING LAND.

The matter of procuring land is one that should be given attention long before the opening of the gardening season. If it is not attended to before the arrival of the rush season, the work is not likely to get the attention it deserves, or something else will be neglected. With the home-garden plan the problem of securing land usually is a simple one, but in densely populated cities it is often a very difficult matter. A preliminary survey usually reveals more land than is believed to be available. The scarcer the land, the more intensive should be the methods of gardening. The magnitude of the garden enterprise is not necessarily in proportion to the size of the garden but is measured by the returns.

Size of gardens.—In the past the garden projects of children have not been sufficiently large to maintain interest without the offering of prizes or other strong inducements. In most cases the gardens have been too small, and, from the lack of adequate instruction, not sufficient produce has been raised from the land in use. In determining the size of gardens for the use of children much depends upon whether they are to be located on the home grounds, where some assistance may be obtained, and upon whether adequate instruction is to be supplied. The age, size, ability, and experience of the child; the character of the soil; and the availability of land are also factors to be considered in determining the size of

the individual garden plat. This is a question that must be determined by the teacher. The important point is that no attempt should be made to set apart any definite amount of land for each child, according to grade. As a rule, fifth-grade children, without former experience, can handle gardens containing from 200 to 300 square feet. Those who have had some experience and those who are unusually strong should carry on larger projects than this. The higher grade children usually may be depended upon to operate successfully proportionately larger areas. The eighth-grade boys, and many of the girls also, after having the instruction and experience during the three previous years, should manage gardens containing from 1,000 to 2,000 square feet, or even more.

There is danger, of course, in assigning too much land to untried children, but boys and girls lose interest more often from having too little land rather than too much. To hold the interest of the children in small towns and semirural sections where gardening is not a novelty, it is necessary to assign larger and more intensive projects than for the children of large cities.

Back yards.—The home back yards should first be used, and it will be necessary for the teacher to make individual visits to the homes of children to insure a proper understanding regarding the use of the land by the children. In small back yards, and where there are two or more children of the garden age, or where the parents insist on retaining part of the land, it may be necessary to obtain additional land in the neighborhood. Neighboring gardens connected with homes where there are no children often may be obtained by paying a small rental or by contributing a certain supply of vegetables in return for the use of the land.

Vacant lots.—When more children become interested and more proficient in gardening, most of the vacant lots in towns and cities will be used for children's gardens. It is sometimes difficult to obtain the use of vacant land for this purpose, but when real estate men come to realize what an improvement in appearance can be effected by gardening, they will be more anxious to make their property available for the purpose. Children should be encouraged to make their own arrangements in their respective neighborhoods and to assume the responsibility. In many cases the instructor's assistance will be needed. In some places the school makes a contract in which it agrees to pay a nominal sum for the use of the land and, before giving it up, to level it and seed it down to grass. In such cases the school should divide up the cost for rent among the children using the land. The amount charged by real estate dealers usually is very small. In general, only $1 per year, or enough to make a legal contract, is charged. In this way full use of the land is assured until the end of the season. A moral promise usually is sufficient for this purpose,

especially where the real estate dealers are interested in the work of the school.

Objections of landowners.—In some cities much difficulty has been experienced in obtaining the use of vacant lots for gardening purposes. This is not surprising, for real estate dealers do not want to enter into an agreement that is likely to interfere with the sale of property. The presence of a thrifty-looking garden may attract attention to the vacant land and, in some cases, contribute to its sale. At the same time, the presence of children's gardens might interfere with the sale. The prospective buyer may want to build immediately, but, on account of a deep interest in the welfare of the children, he may dislike to break up the garden enterprise and consequently select another site. Real estate men are quick to see the possibility of losing a sale in this way. The existence on a contract agreement for the use of the land makes little difference from the standpoint of the dealer. It may be argued that the children's gardening interest may be purchased, in case of necessity, any time during the season, but the conscientious buyer may still object to interfering with the children's enterprises.

The real estate dealer, therefore, has good reasons for withholding permission to the use of the land in his charge. In some places all real estate men have agreed among themselves to defer the transference of titles until the close of the garden season, or, in case of urgent necessity, to reimburse the children for their efforts. As a rule, only a very small proportion of the vacant lots are built upon during the growing season, and in many places real estate men are very anxious that their property be used for this purpose. They believe that the disadvantages of the plan are more than offset by the advantages.

Where difficulty is experienced in getting the consent of real estate agents for the use of lots that are owned by other people, a letter of explanation to the owner usually will bring results. Where the agent refuses to divulge the owner's name the registrar of deeds or the assessor may be appealed to for the information.

This unused land about town often is in bad condition for gardening. Sometimes it is covered with bricks, stones, and other rough material. In many cases it is possible for the children to clean up these lots unaided, but frequently help will be needed. The health, street-cleaning, or park departments may render service in this connection.

Suburban tracts.—In congested areas of large cities it is often impossible to secure for the children sufficient land within walking distance. In such cases the schools should provide for the transportation of the children to suburban sections where large tracts of land may be obtained. Traction companies may sometimes be induced

to run special cars at stated times at reasonable rates. Auto trucks, if not too costly, may be used for the purpose of transporting the children. Where there are large numbers unable to get gardens near by, it may be desirable to limit the garden work to certain grades.

Fencing.—On vacant tracts of land there is sometimes need for fencing. This need is especially urgent during the early stages of vacant-lot gardening. Where most families are engaged in gardening, there is no serious trouble from marauding. In some cities the police department assumes the responsibility of guarding the children's gardens, and they should be expected to do so in all cities. Where the gardens are in poorly illuminated sections, additional lights have been provided, which makes marauding at night more difficult. In other cities temporary or movable fences have been supplied by one or another of the city departments. When gardening is put on a money-earning basis, it is doubtful whether the expenditure of public funds for fencing is justifiable. From the standpoint of the child, it would be much better if the enterprise should be made to maintain itself, and, for this reason, the fences should be loaned rather than donated. Such fences may be considered the property of the department of public safety and be used to aid the police in protecting the gardens.

Eventually, however, there should be no need for fencing. If the children should suffer some loss from stealing, it may be considered part of the moral training incident to gardening.

SELECTION OF CROPS.

The selection of crops, also, is a subject that should be studied and solved in advance of the gardening season. To discuss the principles governing the selection of crops is the purpose here, rather than to consider the adaptability of the individual crops. With children of the grades below the fourth, and possibly including the fourth, it makes little difference what crops are employed, but possibly the more easily grown flowers are best suited. With the fifth grade, definite home-project work commences, and for this purpose vegetables are most suitable. In general, they are easier grown than fruit or flowers. After the children have had some experience in growing plants, they may attempt the growing of flowers on a small but commercial basis. When they have become skilled in growing both vegetables and flowers, some of them may be started on the growing of small fruits; then tree fruits; and later, ornamental trees and shrubs, including their use in home adornment. This is a progressive arrangement and tends to maintain interest. The same result may be obtained, however, by gradually increasing the size and complexity of the project relating to either vegetables, flowers, or fruits.

Vegetables.—In past efforts the main purpose of gardening aside from the educational advantages has been the improvement of home surroundings. The trend at the present time is to commercialize the work and at the same time to increase its educational value. The educational advantages, formerly, were closely associated with moral and physical training, while now they center on the industrial and commercial training.

In the selection of crops for the purpose, therefore, the question of profitableness is one of the first considerations. In estimating the money-making value of a crop for children's gardens, the gross returns are considered rather than net returns after deducting for labor. In other words, a crop that calls for a large amount of labor is often more profitable for a child's garden than one that requires the minimum amount of labor. In the growing of celery the returns per acre are very high, but, on account of the great amount of labor demanded, market gardeners do not consider it any more profitable than many other crops. But from the standpoint of the child, this should be a profitable crop, for it supplies a large amount of remunerative labor. When the gardening enterprise reaches such proportions that the child must employ outside labor, it is time to consider the selection of crops that demand a smaller amount of labor. These are good economic questions to discuss with the young gardeners.

The adaptability of the crop to local conditions is of vital importance. Under this head should be considered character of soil, peculiarities of climate, position in garden with reference to shade and sunlight, special demands of the crop, habits of growth, the location of the garden, the age and experience of the child, the attitude of the parents, and the demands of the market.

It should not be assumed, however, that crops can not be grown profitably unless all conditions are ideal. The rule should be to select crops that are best suited to the fixed conditions and to modify alterable conditions, when possible, to meet the demands of selected crops. Soil may be modified within certain limits by methods of management. The climate and the amount of light and shade are fixed factors. High board fences, however, sometimes may be removed, or replaced with wire ones, and crops may be located in the garden according to their varying light requirements.

Some crops, like turnips, draw more heavily than others upon certain forms of plant food; and some, like beans, thrive on remarkably poor soil. Some require special kinds of treatment, like pruning, training, staking, and bleaching, and these affect the amount of labor demanded.

Whether the garden is located in the back yard or on land some distance from the home is a vital factor. This not only affects the

amount of labor required, but the security of the crop is at stake. Some crops, like melons, are more likely to be stolen when planted where they can not be properly guarded.

The habit of growth of the plant, also, should be studied from the standpoint of crop selection. On small areas it is better to select crops like lettuce and radish, that are capable of more intensive methods, while on larger areas the vine crops, like cucumbers, melons, squashes, and pumpkins, may be admitted. Tall-growing crops, like corn, are not permissible in small plats, nor in larger ones either unless located in such a way that the other crops will not be shaded.

The age and experience of the child must receive consideration. Easily-grown, quick-maturing crops, like radishes, peas, and beans, should be selected for small, inexperienced children, while the older and experienced pupils demand the more precarious crops or those that furnish a "man's job."

The demands of the market should constitute one of the chief factors in the selection of crops. The most available market being the home, the whims and fancies of the parents and other members of the family should receive first consideration. The teacher, of course, may render service in recommending crops that best suit the family needs. Poor families, for instance, should be shown that by growing leguminous crops, like beans, and using them in the ripe condition, they may get along with less meat. Some parents, also, will need to be shown that on a small plat it is more economical to grow "money crops" for market, rather than to attempt to grow the family supply of potatoes. Where there is a poor market for vegetables, the reverse of this recommendation may be better advice.

Where there is an oversupply of the common vegetables, the teacher should suggest special crops that offer better opportunities for market. It is always advisable to recommend a diversity of crops for the children of the neighborhood and to avoid an overproduction of any one vegetable or fruit.

Then, of utmost importance, is the matter of selecting crops that will furnish a continuous supply of vegetables and steady employment for the children. Gardening in the South is an all-year-round occupation, and in the North, by means of hotbeds and cold frames, it may be made to approximate this condition. In actual practice among the schools there is a common belief that one crop from the land in a single season is all that should be expected. In some places only those crops are selected that will mature before school closes for the summer. Where such a practice is followed, the children must get an extremely vague idea of the possibilities of gardening. On the other hand, some children of the South are obtaining five or six successive crops, and many boys and girls of the North are not

satisfied unless they can harvest at least three successive crops in a single season. The teacher who fails to emphasize successive cropping and the use of every means to extend the season is not living up to his opportunities.

Lastly, and by no means the least, is the question of selecting crops that will give a variety of experience and afford greater educational opportunities. Crops differ greatly in this respect. Some require early starting, which demands the making and operation of hotbeds and cold frames, and of transplanting once or twice. Others require either staking, pruning, or blanching, all of which bring out the inventive powers of the child. Others permit instructive employment in that they may be profitably canned during and after the close of the gardening season.

Flowers.—With the shifting of the point of view and the broadening of the purpose of gardening has come a change in method. It has been found that in the early stages of the work there must be a stronger motive than that of improving the appearance of home surroundings, or that derived from seeing plants grow. Crops are now grown for their money value. The growing of flowers from the commercial standpoint changes neither their beauty nor fragrance, nor does it necessarily diminish the pleasure derived from their culture and association.

In the selection of flowers for children's gardens, therefore, it is advisable to keep in mind their commercial value. Their adaptability to the market should also be considered, although special markets for almost any kind of flower may be developed by industrious boys and girls. One boy has made a specialty of growing cosmos and has arranged with the people in the neighborhood to take his entire crop at the rate of 25 cents a bouquet twice or three times a week during the season. Another boy, who has a good-sized hotbed and a cold frame, has been able to develop a large business in raising pansy plants for sale. He was advised by his teacher to do this in order to lengthen the gardening season.

The adaptability of the various kinds of flowers to the purpose intended—whether for wearing or for use on the table—should be studied. As with vegetables, their adaptability to the conditions under which they are to be grown is of importance. Flowers differ as to their cultural requirements. Some require a rich soil, some a moist soil, some require an abundance of light, while others thrive well in shady places. Some demand a cool location; others thrive best in a hot, dry climate.

The growing of flowers should not be limited to girls, for many boys have become intensely interested in this work and have become better boys as a result.

Fruits.—In the past insufficient attention has been given to the growing of various fruits. Most people are too impatient for results, and for this reason it is desirable to encourage children in the growing of crops that require two or more years before any return comes from their efforts. Boys and girls must first be shown the possibilities in the cultivation of the soil, and for this purpose vegetable crops are best suited. When they have been convinced of the possibilities and of their own ability, they should be encouraged to give some attention to fruit growing.

They should start first with the small fruits, like strawberries, raspberries, currants, and grapes; and later with the tree fruits, like plums, peaches, cherries, oranges, lemons, pears, and apples. The tree fruits require a great deal of space, but they may sometimes be arranged along the north side of the garden, or around the border of the front lawn, where they may serve a twofold purpose. Bush fruits thrive fairly well in partial shade, and they may be planted near or beneath the trees. On account of the ease with which they may be cared for, dwarf fruit trees are well adapted to back-yard use. Standard trees, however, will give larger returns for the space occupied. When grown under favorable conditions, a 4-year-old peach tree should produce enough fruit, both fresh and for canning, for the average family. A mature apple tree, if grafted to three or four varieties, should produce enough fruit for the average family in all seasons of the year. In some sections 10 barrels of apples in a single season is not an unusual yield for a full-grown apple tree. If sold at the present retail price in Washington, such a crop should bring at least $75. Such a return, of course, can not be expected every year and under all conditions. It is not difficult, however, to estimate from this what it would mean to have one apple tree in each back yard of the smaller cities, where there is usually abundant room. An apple tree, if properly cared for, may produce a good many crops, for in the Northeastern States it often lives to be 75 years of age. It does not bear, of course, every year, but some varieties are fairly reliable annual bearers. A single Rhode Island greening tree in a Connecticut back yard produced 33 barrels of choice fruit in three years.

Pear trees require little room, are long-lived, and are usually very profitable for back-yard purposes. In certain sections they are more uncertain than apples, on account of their susceptibility to disease. Plums and cherries also are very desirable for children's gardens. Peaches are more difficult to raise, but with favorable soil and climatic conditions, and some experience, good results should follow.

Grapes make a very desirable crop for back-yard culture. In the colder sections they thrive especially well on the south side of a fence

or building. They furnish a wide range of experience, and their culture should be encouraged, especially among the older and experienced children.

Ornamentals.—Nursery practice offers excellent opportunities for schools. Many of the ornamental trees and shrubs are easily propagated, both from seed and from cuttings, and with sufficient instruction almost any of them may be propagated by children. Certain kinds of shrubs, like the barberry, are extremely easy to propagate and are especially appropriate for children's work. A class of boys, if shown how, could grow enough plants with little effort to supply the needs of the town. The third year from seed they may be sold at a good profit, and at a figure sufficiently low to come within the reach of almost anyone. This is the most effective way to start civic improvement work.

The making of hardwood cuttings and the practice of grafting and budding furnish an opportunity for admirable experience. It is quite possible, also, to put the work on a profitable commercial basis and at the same time improve home surroundings, and beautify the city in general. This is a higher type of work, however, and should be given over to the older and more proficient pupils. When children have had three or four years' training in gardening and have reached the eighth grade, they may be interested in the higher ideals. They should be given to understand that on account of their training they should be leaders in civic improvement, and that they should assume the responsibility of protecting shade trees and other public property. With proper encouragement and tactful direction, great things in the way of civic improvement should be accomplished by the older boys and girls.

It is necessary to keep ever in mind the need of a strong motive for promoting work with children. Very little progress may be expected unless there is displayed a greater incentive than the satisfaction that comes from pleasing the teacher or from seeing the city beautified. With boys, and girls too, there is a strong desire for recognition at about the age when they enter high school. This desire for recognition and also the desire to earn enough money to make a good appearance are strong motives for special effort and should be recognized by the teacher.

PLANNING THE GARDEN.

After the land has been procured and when it has been decided what crops are best suited for the individual gardens, it becomes necessary to plan the gardens so that the proper quantity of seed may be ordered and everything made ready for the approaching garden season. It is assumed that the teacher has already visited each garden and after consultation with parents and pupils has decided upon

the area to be planted. It is necessary to know the dimensions of the plat, and, if irregular in shape, a rough sketch should be made by the teacher on his first visit. A sketch is also necessary to show certain peculiarities of the garden, such as variations in soil and light, and its relation to walks, trees, and buildings. With a rough sketch giving these peculiarities, as well as the dimensions, and with the use of a planting table (see Farmers' Bulletin No. 255, and Cornell Reading Courses, Vol. II, No. 34), which gives information regarding distances of planting, almost anyone should be able to make out a good planting plan. The garden teacher may instruct the other teachers sufficiently to enable them to help the children in their rooms to make their plans; or the garden teacher may plan each garden at the time of his visit early in the season.

In the planning of the garden it is necessary to consider subsequent or succession crops, so that sufficient seed may be ordered in one shipment. It is difficult, however, to plan the work in advance for all the individual gardens. Regardless of great care in this respect, there are bound to be some necessary changes. The important point is to plan in a general way for the whole season and to estimate as nearly as possible the amount of seed required.

The planning of the garden also embraces the question of using hotbeds and cold frames. Some crops will need to be started in these or in the windows of the school or home.

Great care should be exercised in the matter of planning for the permanent plantings, such as perennials, bush fruits, trees, and ornamentals. To do this properly, the teacher needs to understand the fundamentals of landscape design as well as to possess a knowledge of fruit and vegetable culture.

Except in the ornamental section, long straight rows should be the rule. The rows should run lengthwise of the garden, unless there is some special reason for their running crosswise. There is need for a path along one end or one side, but if land is plentiful a more attractive back yard may be made by using a walk and a border all around the garden (see fig. 1). Where there is an alleyway at the back of the lot, it is usually necessary to plan a walk from the back door to the alley gate (fig. 2). This walk may be used to separate the garden of two children.

Dividing the land.—Where land other than that in the back yards is used, it will be necessary to divide it up into plats, to accomodate more than one pupil. Occasionally, one boy may desire to use the whole of a vacant lot, and sometimes two or more pupils enter into a partnership agreement and cultivate jointly a vacant piece of land. In such partnership arrangements it is usually advisable to divide the lot so that the pupils may work independently, to insure equal distribution of effort.

In dividing the vacant lots it is advisable to make the plats as large as seems desirable, according to the ability of the children and the amount of land available. Too much space is usually occupied for walks separating the plats. Simplicity should be the rule. To facilitate the work of cultivation, it is advisable to arrange the plats so that the rows of vegetables may be long. Where two, three, or four pupils are to be accommodated, the lot should be divided lengthwise, with a walk at each end, as shown in figure 3–A. Where five or more pupils are to be accommodated, the lot should be divided crosswise, with a walk at each side, as shown in figure 3–B. There is no necessity for walks between the plats, but the children

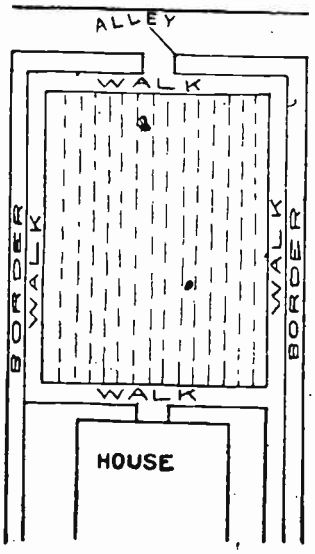


FIG. 1.—Back-yard plan showing walk and border surrounding the garden.

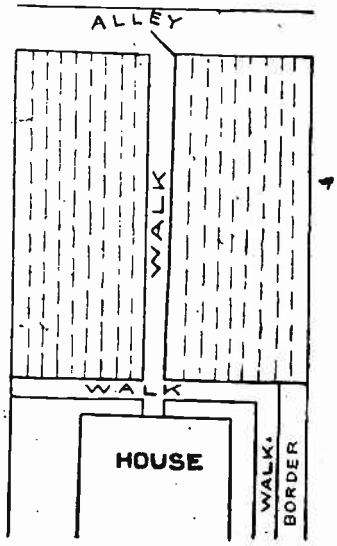


FIG. 2.—Garden plan showing walk from the back door to the alley gate.

should be given to understand that nothing should be planted within a certain distance, approximately 12 inches, from the line of separation.

In dividing larger tracts of land, also, it is advisable to arrange for elongated plats rather than broad ones. The size of the plats will depend upon the number of children to be accommodated and upon the age and experience of the children. But large plats should be provided when sufficient land is available and when the children are capable and experienced. These larger tracts are best platted by dividing the two parallel ends into spaces equal to the width of each plat and intervening spaces equal to the narrow paths, usually about 2 feet. The two parallel sides should then be divided into spaces equal to the length of the plats and intervening spaces equal to the

wider walks at the ends of the plats. These wider walks are usually from 3 to 4 feet in width. The marks along the sides and ends of the tract should indicate the places for setting the line stakes to be used in marking off the field in a checkerboard fashion. The garden line should be drawn tight and a mark quickly made from one end to the other, using a hoe handle for the purpose. When such marks have been made in both directions, stakes may be driven in where the marks intersect. In this way a stake will indicate the four corners of each individual plat (see fig. 4).

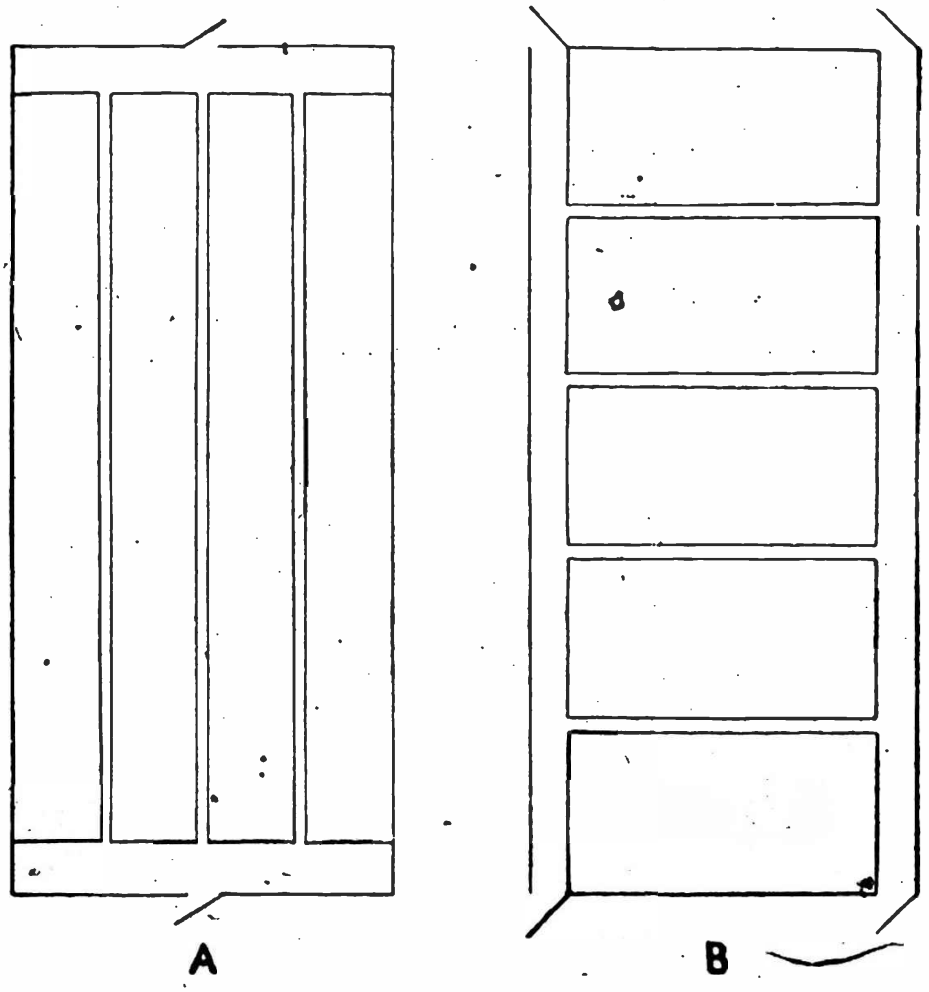


FIG. 3.—A. Dividing a lot lengthwise for two, three, or four pupils. B. Dividing a lot crosswise for five or more pupils.

THE SEED SUPPLY.

The distribution of poor seed, the late ordering, and an insufficient supply of seed have been causes of many disappointments. The teacher should send for seed catalogues about January 1, and determine soon after that how much seed will be required. Children should be encouraged to study seed catalogues. In their efforts to get information concerning the selection of crops for their gardens, they will get good experience in reading.

Order seed in bulk. In the past the children have obtained most of their seed in the form of penny packages. In very few cases are there enough seeds in these packages to supply the requirements. This method of purchasing seed is fairly satisfactory for the small

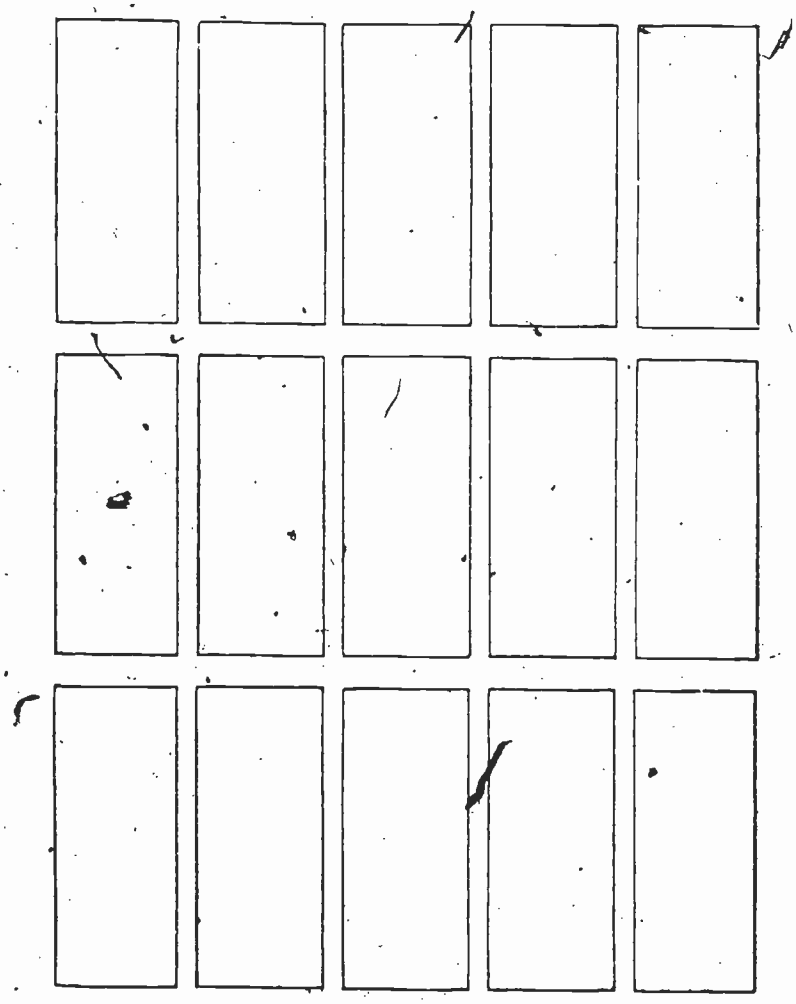


FIG. 4.—Plan for dividing larger plats of land.

plat gardens on school grounds, but for the business gardens in the home back yards and in vacant lots it is more desirable to purchase the seed supply in larger quantities. By the use of planting tables[1] it is easy to determine the amounts necessary of the various kinds of

[1] See U. S. Dept. of Agric., Farmers' Bulletin No. 256, and Cornell Reading Courses, Vol. II, No. 34 (Ithaca, N. Y.).

vegetables and flowers. Seed catalogues also furnish much information regarding quantities of seed needed to plant a given length of row. Each child, in consultation with the instructor, determines the amount needed and hands in his or her order with the money to pay for it.

When all the individual orders of the children have been received, they should be combined and the seeds purchased in bulk. On the arrival of the shipment the seeds are put up into packages by the children, according to the individual requirements. Sometimes by ordering the seeds in bulk there will be a sufficient saving to warrant a refund to the children.

It is important to deal with a reliable seedsman, for there is a great opportunity for deception in the seed business. Seedsmen often have seed left over from previous years, and they sometimes sell this to unsuspecting buyers. Frequently they mix their left-over seed with their fresh supply, and, as a result, the sample will show a low or irregular germination test. To guard against loss from poor seed it is advisable to obtain the supply early enough to allow time for ordering a second supply after proving by testing that the sample is not satisfactory. Reliable seedsmen will exchange the order for a fresh supply if it can be shown that the sample was weak in germinating power.

Discourage the free distribution of seeds.—Many local organizations and individuals, in their zeal to promote the work, have contributed free seeds to children. Such a practice has made it possible for many children to enjoy the growing of vegetables and flowers, but when the free distribution has ceased there has been a conspicuous waning of interest. If a spirit of independence and self-reliance is to be created, the practice of giving seeds to children or of aiding them in any way in financing their gardening enterprises should be abandoned.

In many cases children may not be able to secure the money to purchase the necessary amount of seed for the promoting of a profitable enterprise. Some fund should be made available from which children may borrow the necessary amount to finance their project. Some public-spirited citizen may be willing to furnish a fund for this purpose. The amount borrowed, with interest, should be returned to the fund when the returns come in from the sale of vegetables. Herein is a good opportunity for a lesson in the use of borrowed money and in business integrity.

OUTSIDE INSTRUCTION.

Boys and girls of the country possess a knowledge of many elementary facts relating to agriculture; such as, the proper time for planting and for harvesting crops, the general appearance of agri-

cultural plants in their various stages, the different kinds of soil, the names and uses of tools, and other things too numerous to mention. To put city children on the same basis and to give them approximately the same standing in relation to an advanced or secondary course, the city schools must provide children with an opportunity to acquire a knowledge of these elementary facts, and at the same time train them in the fundamental principles equivalent to such training in the rural schools. It would seem that the city schools, in this respect, were at a disadvantage compared with the rural schools. Inasmuch as the rural children acquired this elementary knowledge at home and during out-of-school hours, it behooves the city schools to see that town boys and girls are provided with a similar opportunity for home training. If the homes do not provide the opportunity, as the rural homes do, it is the duty of the city schools to show parents the necessity for it, and how it may be supplied. There are many phases of agricultural practice, especially those relating to animal husbandry, that are not easily conducted in towns and cities, but these disadvantages are offset by many advantages. The city furnishes a much better opportunity for children to acquire experience in the business and economic aspects of farming. They may come in direct contact with the consumer, with the markets, with the commission houses, with the retail stores, and with the banks. They can see for themselves how the raw materials are used in manufacturing and how the agricultural industry is interwoven with all other interests.

There is a liberal opportunity for teachers to display originality in the matter of furnishing instruction during out-of-school hours. No attempt should be made to follow common classroom methods, for such are sure to put a damper upon the spontaneous efforts of children. The boys and girls should not be led to believe that the instructor is the source of all gardening knowledge. While it is a hopeful sign when children ask questions and while they should be encouraged in the practice, the teacher should not attempt nor be expected to answer directly all such questions. He should be able to satisfy and intensify the children's curiosity by suggesting how they may get the desired information directly from either the soil or the plant.

Boys and girls, despite careful direction, are sure to make some mistakes, but these constitute a very important part of their training. Teachers would do well in this connection to follow the advice given in "Jock of the Bushveld:"[1]

> Boys is like pups—you got ter help 'em some, but not too much, an' not too soon. They got ter larn themselves. I reckon if a man's never made a mistake he's never had a good lesson. Effyou don't pay for a thing you don't know what it's worth; and

[1] Jock of the Bushveld, by Percy Fitzpatrick, 1907, p. 38.

mistakes is part o' the price o' knowledge—the other part is work. But mistakes is the part you don't like payin'; that's why you remember it. You save a boy from makin' mistakes, and ef he's got good stuff in him most like you spoil it. He don't know anything properly, 'cause he don't think; and he don't think 'cause you saved him the trouble, an' he never learned how! He don't know the meanin' o' consequences and risks 'cause you kep' 'em off him! An bymbye he gets ter believe it's born in him to go right, an' knows everything, an' can't go wrong; an' ef things don't pan out in the end he reckons it's jus' bad luck! No, sirree! Ef he's got ter swim you let him know right there that the water's deep an' thar ain't no one to hol' him up, an' ef he don't wade in an' larn, it's goin' ter be his funeral!

The school laboratory.—It is very desirable to have a small plat of ground at or near the school that may be used as a garden practice ground or school laboratory. As previously pointed out, this plat should be used to demonstrate methods rather than to illustrate a model garden. If used as a standard it may do more harm than good, for, owing to adverse conditions or to some mishaps, the standard may prove to be too low. Even though the model garden should turn out well and should be perfect in every detail, it fails to make the desired impression upon the pupils, because it has been produced under abnormal conditions, and children are not expected to compete with the school. But a real inspiration comes to a child when the superior achievements of other children are pointed out. These are the real demonstrations.

The school practice ground, however, should afford an excellent opportunity for the children to get practice in the use of tools and in the various operations connected with gardening. Here is the place to teach children how to spade, to rake, to hoe, to plant, to transplant, to make a mulch, to irrigate, to make a hot bed, to make a compost, to prune, to train, to stake, to bleach, to prepare crops for market, and the like.

An inside laboratory also is very useful, especially for rainy-day work. Such a laboratory often may be provided in the basement. The pupils themselves, with the guidance of the instructor, may erect a shelter in some inconspicuous place to serve as a laboratory. In this rainy-day laboratory a great variety of exercises may be performed. Simple experiments may be conducted to demonstrate principles of soil management, to show the movement of water in soils, the water-holding capacity of various types of soils, the function of the soil mulch, etc. Practice also in making cuttings, in grafting, in budding, in making germination tests, and the like, may be afforded. Demonstration work in canning for home use and for market also may be done in such a laboratory.

The school equipment for gardening.—As previously intimated, with the home project work in gardening there is little need for any elaborate equipment, because children procure their own outfits. Many schools are doing effective work without equipment; and many others

with a complete supply of tools and appliances are not living up to their opportunities. More depends upon the ability and resourcefulness of the teacher than upon the amount and quality of the equipment.

There are some things, however, that may be regarded as very desirable, although not necessary, for the schools to possess. In addition to the shelter for rainy-day work there may be provided a simple spraying outfit, costing about $5; one or two wheelbarrows, at $4 each; two or three wheel hoes, at $3 each; one canning outfit, at about $8; three spading-forks, three rakes, and three hoes, at about 75 cents each; three hand weeders and three trowels, at about 25 cents each; and a garden line, at about 50 cents. The smaller tools are needed only when demonstration work is done at the school. The larger and more expensive tools are desirable to lend to the children. If desired, a small charge may be made for their use and thus a fund created to buy new equipment.

There may be a need for some apparatus for inside laboratory work, but most of this should consist of simple home utensils that may be temporarily supplied by the pupils. Osterhout[1] has shown how numerous experiments with plants may be conducted by using simple and homely apparatus.

It is sometimes desirable, also, for the school to maintain a hotbed and a cold frame. These are useful for demonstration purposes, and the plants grown in the process may be sold at small cost to the children. This school outfit, however, should not take the place of the home outfits of the older pupils, nor should the sale of the plants by the school interfere with the legitimate business of children in growing plants for sale.

Back-yard instruction.—In most cases a large proportion of the instruction should be provided at the homes of the pupils. Conditions under which the children work vary so greatly that each home garden may offer a different set of conditions and, even though excellent opportunities are afforded for school instruction in gardening, much attention should be given to the problems of individual children.

The garden season usually opens with a rush and since an early start is usually one of the chief factors for success, this will be the busiest time for the instructor. Where there is no practice plat at school he will need to work with small local groups of children. He should arrange with certain homes for a series of demonstrations. On one afternoon he should have it announced in school that in a certain back yard there is to be a demonstration in spading, raking, and planting. All the children who are to make gardens and who

[1] Osterhout, Experiments with Plants, 1905.

live within a designated radius of the selected place should be requested to be present. The following afternoon a similar demonstration may be arranged for the benefit of the pupils in an adjacent section, and so on, till all of the children have had an opportunity of seeing these operations performed. After the spring rush is over the instructor should make periodic visits to the individual gardens to see that the instructions have been properly carried out. The frequency of these visits will depend upon the number and accessibility of gardens on his route. He should aim to visit each garden at least once every two weeks during summer vacation. The younger and inexperienced gardeners often require more frequent visits than the upper-grade boys and girls. Some teachers manage to see every child once each week, and they believe that every trip is worth while.

Intensive methods.—Probably the most conspicuous weakness of former efforts of children has been the failure to make full use of the land. The teacher on his trips of inspection and instruction will find abundant opportunity for giving assistance along this line. Children should be shown that by the proper selection of companion crops the best use of the land may be made from the beginning, and by the prompt use of succession crops a continuous use of the land may be made and a continuous supply of vegetables may be produced. In this connection teachers will need to know the space and seasonal requirements of the various crops. Some of the books on vegetable growing furnish many examples of suitable crop combinations.

The instructor also should emphasize the importance of maintaining the fertility of the soil to insure continuous and profitable cropping. He should indicate to children the sources of fertilizer supply. He may be able to arrange with the street department to deposit the street sweepings at convenient places for the use of the children. He may arrange for a combined shipment of lime or of commercial fertilizer to be divided among the young gardeners at wholesale rates. He should show them how the supply of humus in the soil may be maintained by the growing and turning under of green crops and by the making and applying of compost (see Bureau of Education School Home-Garden Circular No. 4).

Trips to near-by vegetable gardens or truck farms should form part of the outside instruction. Such trips may be arranged in advance and constitute part of a day's outing or picnic, the remainder of the day being devoted to games or other kinds of contests. Trips to public markets and produce commission houses are also instructive and tend to broaden the child's views. Visits, also, to some of the representative children's gardens should serve a useful purpose. To see better gardens is always an inspiration, both to the visited and visiting pupils. Such visits should afford an opportunity to call attention to the effect of superior methods of treatment as well as to the results of unfavorable local conditions.

Gardening the year around.—In many sections gardening may be conducted 12 months of the year, and in most sections the work may be started much earlier and continued much later than is generally believed. Winter gardening often is more profitable than summer gardening. It lengthens out the employment season for the children and furnishes them with a wider range of experience. It makes it possible, also, for most people to share in the wholesome effects following the use of green vegetables as food during the winter months. The use of hotbeds and cold frames and the employment of special methods are necessary for successful winter gardening. Teachers may obtain such information by consulting School Home-Garden Circulars 3, 5, and 6, of the Bureau of Education. Circular No. 10, of the same series, furnishes a suggestive monthly schedule for home garden work in the South.

Instruction circulars and announcements.—In many places the instruction of the children has been done largely by means of printed leaflets. This should be regarded only as a makeshift method. Where gardening teachers are employed, there is not so much need for printed instructions. A printed list of simple instructions, however, for the growing and handling of each crop under the peculiar local conditions would be serviceable. Much information of a general nature may be obtained from seed catalogues and sometimes from the envelopes in which seeds are purchased. Since there is such a variation in soil and climate throughout the country, this information is not sufficient.

In some cases it might be advisable to print a monthly or weekly circular, giving timely instruction and making garden announcements. This service, however, may be conducted just as effectively and at lower expense by means of a bulletin board. By supplying current instructions and by making daily announcements through this medium, children are encouraged to keep a close watch of the bulletin board. Daily papers are usually glad to print such matter, and therefore should be supplied with copies of all announcements and instructions. This makes it possible for parents to keep in close touch with the garden work and the recommendations of the instructor.

CLASSROOM INSTRUCTION.

It is not the purpose here to contribute to the pedagogics of the subject, for the teacher who comes into personal relations with the children can best work out and apply pedagogic ideals. The main purpose is to show the relation between the classroom work and the outside instruction. The emphasis has been placed upon the outside work and especially upon its economic aspects. There is need for coupling up the outside work with the regular school training, lest the children get the idea that gardening instruction is intended

solely for the purpose of increasing their individual prosperity. Teachers should grasp the opportunity here offered to show that the intensive and economic methods recommended are not only for personal gain, but to prevent waste, which is not only a menace to present prosperity, but an offense against posterity. There is here, also, a great opportunity for the broad-visioned teacher to give children not only a knowledge of some fundamental principles relating to agriculture, but to furnish a glimpse into the wondrous workings of the universe.

Agriculture as a field of knowledge.—With the teaching of gardening must be considered other closely associated subjects. Such subjects as elementary science, agriculture, and nature study are occasionally taught in elementary schools. Different names are often applied to the same kind of instruction, but it makes very little difference what it is called. More depends upon the sources of knowledge from which such instruction is drawn and how it is presented. The instruction means very little unless it is based upon the experiences of the children. Experience in some available fields of science and industry and some compelling motive to induce children to enter these fields must be provided. The occupation of productive agriculture, with its wide interests, affords an opportunity for a great range of experience, and, if made profitable, supplies the necessary motive to attract and hold the interest of children. Later in life the boys and girls should have no trouble in associating with science the knowledge gained through their experience in the successful production of crops. Although not so designated, agriculture is the commonly accepted field from which is drawn instruction in science and nature as taught in the elementary schools. There seems to be no good reason, therefore, why the term "agriculture," or more specifically "gardening," should not be applied to that form of instruction which is intended to bring children into close touch with nature and into harmony with their environment. To the children who are engaged in the work, the term will have a definite meaning. Other terms may be applied to other phases of similar effort.

The reasons for the teaching of agriculture in the schools have been ably presented by Eugene Davenport,[1] dean of the Illinois College of Agriculture. It will be seen that he justifies the use of the subject not only from the standpoint of agriculture, but on the ground of good public policy.

1. To cultivate an interest in and instill a love and respect for land and the occupation of agriculture.

2. To create a regard for industry in general and an appreciation of the material side of the affairs of a highly civilized people.

3. To cultivate the active and creative instincts as distinct from the reflective and receptive, that are otherwise almost exclusively exercised in our schools.

[1] Course of Study for the Common Schools of Illinois, 1908, p. 207.

PART OF THE GARDEN OF A WALTHAM, MASS., LAD OF 15, WHO RAISED $110 WORTH OF VEGETABLES IN A SEASON.

A 9-YEAR-OLD SCHOOLBOY OF BIRMINGHAM, ALA., AND HIS SCHOOL HOME-GARDEN.

4. To give practice in failure and success, thus putting to the test early in life the ability to do a definite thing.

5. To train the student in ways and methods of acquiring information for himself and incidentally to acquaint him with the manner in which information is originally acquired and the world's stock of knowledge has been accumulated.

6. To connect the school with real life and make the value and need of schooling the more apparent.

7. As an avenue of communication between the pupil and the teacher, it being a field in which the pupil will likely have a larger bulk of information than the teacher, but in which the training of the teacher can help to more exact knowledge.

How gardening affects the school program.—The introduction of a new subject into an already crowded curriculum is likely to provoke considerable discussion. In this respect history repeats itself. Other new subjects have been introduced in the face of seemingly insurmountable obstacles and sometimes despite strenuous objections from within. Gardening, whether or not it is designated by that term, is bound to be introduced in the elementary schools, and many cities already have given it a place in their school curriculums. The failure to find a place on the school program, however, should not be regarded as an insurmountable obstacle, for successful work may be accomplished by calling together the young gardeners at stated intervals during out-of-school hours. The important thing at the present time is to convince the public of the value of the work, so that when the readjustment of the system occurs, the subject shall be given its proper place.

The amount of classroom instruction necessary will depend largely upon the number of children to be instructed, the amount of outside instruction afforded, and the ability of the teacher. Some schools provide a 40-minute period per week, and the teachers claim that twice this time would not be too much. This is a matter that must be settled locally, and the time allowed for the work will be increased in proportion to the demonstrated value of the subject.

Where a grade teacher has been selected to conduct the garden work in addition to her regular subjects the common practice is to exchange classes once a week with each of the upper grade teachers. A certain period for each grade is given over to instruction in gardening. The gardening teacher, while giving this instruction, is relieved for that period by the teacher whose class is being instructed.

Where a special or an extra teacher is engaged, the school program is so arranged that a definite period may be set apart for gardening instruction. It is a great advantage if the teacher whose class is being instructed can be present. She should be able so to associate the garden work with the regular work as to render both more effective.

Teaching is not telling.—Education has been defined as the modification and development of behavior through experience. This denotes two kinds of effort; First, the acquisition of experience; and second, the expression of acquired experience. As applied to

the subject in hand, the gardening instructor provides the experience, and the regular teacher provides the means for expression. This is only another way of stating that the gardening instructor sets the children at work and the regular teacher teaches them to speak, read, write, draw, and cipher, to facilitate their reasoning and expressing. Herein lies the explanation of much of the success of gardening in the general scheme of education. Too often children are called upon to express themselves before they have anything to express.

The children, therefore, are expected to get their knowledge from their contact with nature and the affairs of life, and the chief duty of the teacher of gardening is to bring about the proper contact. The children should do their own investigating, their own thinking, and their own expressing. They must be told some things, of course, but these facts should be closely related to their experience, which, in general, should be regarded as a prerequisite to the study of the subject. The actual garden work, therefore, must precede the classroom instruction, and teachers who follow this rule will find that the work of teaching has been greatly simplified.

To couple up the outside work with that of the classroom, it is necessary to follow the project method, which consists in studying in natural order one subject at a time. As each problem presents itself in the garden, it is investigated and conclusions drawn. For this reason much of the work is individual instruction and performed in the individual garden. Many problems, however, will confront all the children at about the same time, and certain phases of these may be studied in the classroom or laboratory. For example, certain problems are presented, in the preparation of the soil for planting, one of which is "what are the conditions necessary for germination?" Simple experiments may be performed in the classroom to show that seeds require air, moisture, and warmth. It can also be shown that some kinds of seed are more exacting in these respects than others. In like manner the functions of the leaves may be studied both in the garden and the classroom. The effect of insect injury to leaves may be observed in the garden, and the principles may be demonstrated in the classroom.[1]

Teaching, therefore, is more than telling. It consists chiefly in creating in children a desire to learn, in supplying them with an opportunity to learn, in directing their learning along desired channels, and in providing them with the tools of expression.

Correlation with other subjects.—Writers on the subject have laid much stress upon the importance of correlating other school subjects with that of gardening. Teachers, also, claim that by using concrete

[1] School Home-Garden Circular No. 2, of the Bureau of Education, furnishes an outline for a course in vegetable gardening based upon the project method of teaching. It has been prepared especially for use in teacher-training courses; but, in that it suggests many projects, teachers should find it useful in the teaching of gardening.

garden problems they can make their teaching more effective. From what has been said in the preceding discussion there should be no doubt that mathematical exercises employed from necessity in garden computations, or that can be turned to good account in garden work, have a vital significance in the mind of the child; that the writing of a story relating garden experiences makes the practice of composition writing a natural and spontaneous exercise; that keeping an account of the business transactions of the garden enterprise will motivate and make easy the study of bookkeeping; and that the making of plans for planting and for the improvement of home surroundings will make drawing and art studies more real and purposeful.

The gardening instructor, therefore, should keep the other teachers informed concerning the kind of work in progress and suggest ways in which they may make use of the garden experiences of the child in the teaching of regular subjects. The regular teachers, on the other hand, should suggest to the gardening instructor ways in which he may have the children utilize promptly the information gained in the classroom. Much of the school work may be interwoven with garden practice, but there is no necessity for the strained effort that sometimes has been exerted to correlate in every conceivable way all kinds of school subjects with that of gardening. In general, the children are capable of doing their own correlating.

DISPOSING OF THE CROP.

Supplying the home.—The most available market for the products of the garden is the individual home. Children should be encouraged to raise the quantity and kind of vegetables needed by the family, both in the fresh and the canned condition. In some places both the children and teachers have complained that they have been unable to dispose of the crop at a profit. Where such conditions exist more care should be exercised in planning the garden to suit the needs of the family. If children raised nothing more than the supply needed by the family, the results would be astonishing. Few families use less than $50 worth of fresh or canned garden products during the year, and many use twice this quantity.

Parents should make some business arrangement with their children who are doing the garden work. They should either pay for the vegetables and other supplies outright and charge the children with a nominal amount for their keep, or open an account with each child and on the credit side enter the amount and value of the vegetables, and on the debit side enter any expense they feel justified in charging up to the child for his board. The child, of course, should keep the accounts, as suggested under another head. This practice affords a business experience for the child and enables him to make a more complete record of his garden enterprise. It

also emphasizes the obligations of the child to the family and teaches him the lesson that he must pay his way.

Developing a special trade.—Where there are a number of children in the family and where there is abundant land, the older boys and girls should be able to raise some vegetables, fruits, or flowers for market. The most available market next to the home is that of supplying the neighboring trade. There are always some homes where there are no children, and there are usually some where no, or insufficient, land is available. Most communities also have their boarding houses, restaurants, hotels, and hospitals. There is usually, therefore, a good opportunity for developing a special trade with people in the neighborhood. Special customers of this kind usually pay the best prices, especially if the gardener will take the responsibility of keeping up a constant supply. Some pupils may arrange to supply a bouquet of flowers at stated times to a certain number of customers. Others may arrange with a few families to supply them with a different kind of vegetable every day of the week. A number of children may combine in supplying certain boarding houses. Boarding houses are often willing to pay an extra price for vegetables prepared ready for the kettle or for the table. Peas and lima beans, upon request, may be shelled ready for use; corn may be husked; celery, onions, and radishes may be trimmed and washed; and salads, even, may be prepared for the table.

Many boys and girls have been able to create a demand for certain kinds of vegetables of high quality. Few city people have had the opportunity of obtaining vegetables of high quality fresh from the garden. Varieties of vegetables differ greatly in quality, and, as a rule, the low-quality sorts are easier and more frequently raised by market gardeners. Furthermore, vegetables deteriorate after harvesting. In some cases this process is quite rapid. The sugar in such vegetables as peas, beans, and sweet corn rapidly changes into starch, with the resultant loss in quality. Market vegetables generally are harvested one day and brought in to market the next, and in cases of long-distance shipments it is several days after harvesting before they reach the consumer's table.

Many boys and girls, therefore, should be able to work up a good trade in fresh vegetables of high quality. One boy has developed a special trade with green lima beans. He says that his customers declare they never knew what fresh lima beans tasted like till he brought them around. He started two years ago by presenting a pint to each of three families. He is now a lima bean specialist and can not supply the demand. Another boy has worked up a large trade in Golden Bantam sweet corn. People who once taste fresh corn of this variety are sure to call for more. Many girls, also, have developed special markets for their canned products and have no trouble in selling all they can produce.

Sometimes boys and girls have displayed their goods on tables located on the edge of their lawn and near the sidewalk, so that people passing may be induced to buy something. This has been very effective, and boys and girls have learned that hungry people on their way home from work with their week's wages in their pockets are very easily tempted by fresh vegetables, luscious fruits, and attractive flowers. The teacher will have abundant opportunity, therefore, to display his originality by suggesting ways for developing special trades.

Public markets.—A school superintendent, in discussing the need for a market, states:

> The children take a pride in their work and the products of their efforts, but they want to be sure of some financial returns before starting on such a venture. To the average boy or girl there is no glory in a garden, just for the sake of having one, but there is, however, if the reward is sufficiently tempting and remunerative.

Where the schools have been encouraging productive gardening for several years, they have found it necessary in some cities to develop some kind of public market to take care of the surplus vegetables. In some places a stand in the public market has been engaged for the use of children. In other cities, special places have been assigned for the purpose of serving as market places. These are sometimes located on the curbing of certain sections of streets, and sometimes on the grounds adjacent to public buildings.

Where public markets are provided, some responsible person should be placed in charge. Such a person should give the children instruction in the proper ways to prepare and display their produce in the most attractive way and to train them in business methods. The market should be open only on stated occasions, so that the public may know when to patronize it. Saturday morning is probably the best time for children to do their marketing, although during summer vacation they may find it desirable to open the market two or three days each week.

The following account of the experience of the schools in Rochester, Minn., may be helpful to those who are planning for some effective way of disposing of the children's products. The part played by the Civic League is especially commendable:

> One of the chief criticisms to the promotion of this kind of work is that the children, after once producing the vegetables, flowers, etc., have no means of disposing of them. This objection has been largely overcome by the Civic League, the members of which, realizing this fact after several years of garden work, set about devising means for disposing of the produce raised by the children. The public market plan at once suggested itself. None of the leaders had previously any experience in this line of work, consequently the first few market days were in reality more of an experimental nature.
>
> The start was made in rather a small way at first by placing a number of tables on a corner of the Central School lawn, near one of the mainly traveled streets. On these tables the children placed their vegetables, flowers, etc., which were neatly prepared and displayed, and proceeded to sell them. Later on, as the quantity of market

stuff increased, more tables were added. A large portable sign on which was printed CHILDREN'S MARKET was erected a short distance back of the tables as a sort of an advertisement. Instead of sitting down and waiting for customers to come to the market, the various boarding houses and private homes were called by phone and their orders taken. The youngsters having the kind of articles desired were sent to make the delivery. In this way practically everything was disposed of by the closing time.

The market was held regularly twice a week, on Wednesday and Saturday mornings from 9 till 12 o'clock. The first market was held about the middle of June and continued twice a week till the first week in September, when it had to be discontinued on account of the opening of school. Every market day two ladies of the Civic League were present to look after the management of it. Practically all the sales were made by the children themselves, some of whom became quite proficient as salesmen. The ladies in charge gave but little assistance, except where it was necessary. The idea in this was to teach them to do business for themselves, thus teaching them self reliance and developing in them business ability.

Storing vegetables for winter use.—From the lack of knowledge few people realize the possibilities in storing vegetables for winter use. With a cool cellar many kinds of vegetables may be kept for several months. The root crops, like beets, turnips, and carrots, keep best if packed in moist soil and stored in a cool place. Of course, they will not stand freezing. Onions demand a dry place. Winter squash require a warm, dry storage, for which the furnace room, after the fire has been started, answers the purpose. Parsnips and salsify may be left in the ground for early spring use. Where cellars are not available, or where the furnace makes the cellar too warm, many of the vegetables may be stored in pits in the garden. Apples, also, may be kept in this way. They must be well covered with straw or leaves, to keep them from freezing. The straw or leaves are held in place by a covering of soil. Where a good, cool cellar is available, and when boys and girls understand the principles of storage, they often may find it profitable to store some vegetables for home use or even for sale during the winter.

Canning.—Reference has been made to the remarkable achievements of the members of the garden and canning clubs of the South. In many instances girls have been able to make handsome incomes from the sale of canned produce. Boarding houses, restaurants, hotels, and private families are demanding larger and larger quantities of canned vegetables and fruits. They are popular because they can be so easily and quickly prepared. Boys and girls, therefore, should have no trouble in disposing of their surplus products in the canned condition. The children would do well to can enough at least for home consumption. The practice of canning is worth while, also, because it gives a wider range of experience and affords a training in a useful and closely related occupation.

The operations connected with canning either in tins or in glass are not difficult and may be performed by children 10 years of age. As a rule, the canning in glass jars for home use and for special trades is recommended in preference to canning in tins. A common wash-

boiler on an ordinary stove will answer the purpose, but, in this case, a platform should be arranged around the stove to make it easier for children to handle the jars. There are on the market several kinds of home-canning outfits which are more convenient than the wash-boiler on the kitchen stove. A group of the older boys and girls may find it advisable to purchase one of these on a cooperative basis, or the school may purchase one or more to lend to pupils. The various State colleges are encouraging this work among the rural boys and girls, and usually may be prevailed upon to give demonstrations in canning, whenever requested.

It is important, for the sake of developing a reputation, that the school use a uniform type of jar and a distinctive label for its canned products. The school, also, should insist upon maintaining a high standard of quality. The pupils who do not comply with the regulations in this respect should not be allowed to use the standard label. This furnishes another lesson in the business value of honest dealing.

KEEPING RECORDS.

Children's records.—An admirable opportunity for giving children training and experience in keeping accounts is often neglected in garden work. To afford a training in bookkeeping is not the purpose of the work, but the practice is worth while from the garden standpoint. It is desirable that children be able to compare the profitableness of gardening with other occupations. It is also worth while for them to learn the value of labor in terms of dollars and cents. If any of them are to follow gardening or farming as an occupation, they should be taught that business methods may be applied to farming—a lesson most farmers, to the detriment of the industry, have failed to learn.

The record keeping should be made as simple as possible, and no attempt should be made to have children report every incident connected with the work in the garden. The child's record book should not be a diary, in any sense. Gardening notebooks especially arranged for the keeping of weather records, dates of sowing, thinning, transplanting, watering, etc., can be purchased. The keeping of such records, however, is an unnecessary burden and furnishes information that is of no practical value. The planting of crops and the performing of the various operations is no longer done "by rule of thumb." The gardening program, as well as the proper treatment for the present season, is determined by the peculiar behavior of crops, rather than by the conditions and treatment of former years. The treatment of former seasons may or may not be the proper treatment for the present season, and the probability of error from following such records exceeds that of following the dictates of good judgment.

The garden record should show all expenditures, including rent of land, labor, and the cost of fertilizers, seeds, spraying materials,

tools, and other supplies. Many of these items often are contributed without expense to the child, but the cost in each case should be estimated at prevailing rates. As a rule, no outside labor will be required, but a careful record of the pupil's own labor should be kept and estimated at about 6 to 10 cents per hour, depending upon age and experience. The cost of tools and other kinds of equipment that usually last for more than one season should be prorated, so that the expense may be spread over the approximate number of years of service. Since most garden tools last for at least three years, the initial expense may be divided by three. Tools that have been used and that belong to the home may be charged at about one-third their original cost. The cost of lime or other slowly dissolved fertilizers that are applied only once in two or three years may be prorated in the same way.

The records should show, also, all forms of revenue from the enterprise. The chief revenue, of course, will be from the sale of products. The records should show the amount and estimated value of the products used by the family, distinct from those sold outside. In estimating the value it is necessary that the children and the instructor keep in close touch with the market. Certain papers give daily quotations, and these, if necessary, may be used as a guide. There should be a definite understanding regarding the measures employed, and these should be the measures in common local use. If beets are usually sold in bunches of a certain number and size, this should be the accepted standard. When tomatoes are sold by the quart or pound, the same system should be followed by the children. Some exceptions to this rule may be made, of course, where children are catering to a peculiar private trade.

There may be other forms of revenue, such as prizes, outside labor, and the sale of unnecessary tools and surplus seed or fertilizer. It is not advisable to credit outside labor to gardening unless the pupil helped some other person in garden work and received money in payment. No trouble should be experienced in properly crediting any other item.

The children should make their entries for expenses and receipts daily, and some form should be supplied for the purpose. The simplest and most inexpensive form is a small scratch pad costing 1 cent. One leaf of this may be used for each day's record, and at the end of the month or season the items are transferred to the monthly or yearly report blank, as desired. In some cases quite elaborate booklets, in which to make their daily notations, are supplied to children.[1] Provision is made in these for daily expenses and receipts, for the labor account, for summaries, and for a written statement of garden experiences and conclusions.

[1] The Bureau of Education has prepared a gardening record book for children. This form is not for general distribution, but sample copies may be had upon request.

DEPARTMENT OF THE INTERIOR.
BUREAU OF EDUCATION.

HOME GARDEN MONTHLY REPORT.

Month..... Year.....

Name of pupil.....

Address (street and number).....

PRODUCTS HARVESTED.

Name of crop.	Amount used at home.	Amount sold.	Money value.

EXPENSES.

Quantity.	Articles.	Price.	Amount.

WORK.

.....hours worked at .....cents per hour.....

.....

FIG. 5.—Suggestive form for home garden monthly report.

DEPARTMENT OF THE INTERIOR
BUREAU OF EDUCATION.

TEACHER'S RECORD.

Name of pupil ..... Age..... Grade.....

Address..... Location of garden .....

Former experience.....

Attitude of parents.....

Size of garden..... Character of soil.....

Peculiar local conditions.....

Sketch below the planting plan, indicating the name and location of crops:

Record here monthly reports of receipts and expenditures.

Month.	Receipts.	Expenditures.
Jan		
Feb		
March		
April		
May		
June		
July		
Aug		
Sept		
Oct		
Nov		
Dec		
Total		
Profit		

Over.

FIG. 6.—Suggestive form for teachers' records.

RECORD OF INSPECTIONS.

Name of pupil.....

Date, 19...	Condition of garden.	Suggestions offered.	Nature of instruction.

FIG. 7.—Reverse of teachers' record blank (Fig. 6).

It is desirable that children be required to make monthly reports during the gardening season. These will be of assistance to the instructor and will tend to intensify the efforts of the children. A suggestive form for the purpose is shown in figure 5. The children, also, should be expected to make and present a summary of their year's business. A written statement of experiences and conclusions in connection with this is worth while in that it starts the child to thinking about the project as a whole and considering the advantages of the work and the opportunities for improvement during the following year. It also furnishes experience in expressing ideas in writing.

Teachers' records.—The use of either a card or a loose-leaf system of keeping records of the work of the children is recommended for gardening teachers. Such records should show the name, address, age, and grade of each pupil in gardening. It should show, also, the location and plan of each garden. Space should be provided for entering the monthly reports of receipts and expenditures as submitted by the children, and for recording notes pertaining to the condition of the gardens and the recommendations and instructions furnished at the time of each visit. These cards or loose leaves should be in such form that they may be carried about by the teacher to facilitate in the work of inspection and instruction, and at the same time serve as permanent records. Inasmuch as they may be carried conveniently in a folder, loose leaves probably are better adapted to the purpose. A separate leaf may be used for each pupil. The accompanying illustration (fig. 6) should serve as a guide in the selection of a suitable form. It represents a loose leaf printed on both sides. The bottom of the face of the sheet is opposite the top of the reverse side, so that when the leaf is turned it is in position for writing. The back of the sheet is reserved entirely for records of visits.

AROUSING AND MAINTAINING INTEREST.

In the teaching of gardening, as with other subjects, there is great need for enthusiasm. Teachers, in order to arouse enthusiasm for service, must themselves be enthusiastic. If all teachers had the ability to inspire their pupils, as well as the proper point of view toward the work, there would be no need for discussing methods of arousing and maintaining interest. The teaching of gardening as described here is an active method, as distinguished from the sit-still method. It is intended that it should give to the child freedom of action and freedom of thought. It puts the pupil in touch with living things and encourages exuberance, spontaneity, and originality. These are the conspicuous features of the method, and any attempt to suppress them results in a waning of interest as well as a depreciating return.

It has been repeatedly said that in the teaching of gardening there should be a strong motive, and this point is emphasized again because it is too often overlooked. If children are not hampered by prevailing school practices, and if shown how they may conduct profitably a business enterprise in gardening, the matter of maintaining interest need not concern the teacher. In common practice, however, several methods have been adopted. Some of these are of considerable value and others have not sufficient merit to warrant their adoption. It seems desirable, therefore, to discuss some of these common practices.

Contests.—The spirit of contest prevails in all games that are popular with children, and without it the games would be devoid of the power to interest. The incentive is the desire of achievement, with its attending honor or notoriety. An attempt frequently has been made to put the spirit of contest into gardening. Contests have been arranged among individual children, among grades, and among schools. With the expenditure of considerable effort and enthusiasm some conspicuous results have been obtained in this way, but where the spirit of play has been overemphasized there has been a corresponding loss in the spirit of work. As a rule, something more than the spirit of play is needed, something that will not only bring notoriety to a few, but will mean a conspicuous personal gain to all participants.

Prizes.—With the idea of increasing the incentive, the offering of prizes has become a common feature of gardening contests. While this practice has brought out some conspicuous individual and community achievements, it has not been productive of lasting results. Only a small proportion of the children achieve the honor of winning prizes, and the others frequently become disappointed. For the sake of fairness in gardening contests, the children usually are not expected to obtain any help from parents or other members of the family. Since it is always desirable to encourage a spirit of mutual helpfulness between children and parents, this is an unfortunate, though necessary, regulation in prize contests.

The offering of prizes also tends to encourage dishonesty, for there is a strong temptation on the part of the child to get help from outside and to render false reports. Parents, and sometimes teachers, when the respective interests of their children and schools were at stake, have been known to countenance such forms of dishonesty. When the children have the approval of both home and school on matters of this kind it is not difficult to imagine the effect upon their moral development.

There has been too much exploitation in the matter of organized contests for children. Organizations and individuals who offer prizes are often more interested in furthering their own interests than those

of the children and frequently acclaim through the press and in other ways the remarkable achievements of certain childre ho may or may not have accomplished something worth while. Sometimes the prizes awarded are altogether out of proportion to the achievement. Boys and girls have won free trips and large cash prizes when there have been no other contestants. In other cases children have won prizes of $1 or $2 for achievements which have brought profits of from $100 to $200. Children should be given to feel that the rewards in life come in proportion to the effort expended and that the occupation of agriculture offers its own just rewards. Many people have realized the danger in offering prizes of high value and have endeavored to evade the consequences by offering useful articles that may be used in garden work. If valuable prizes are to be offered, these are probably the most approved kind, for they tend to encourage further garden effort. The great objection to prizes in general, however, is that they detract attention from the real achievement. Children, with their attention focused upon the prize, are likely to lose sight of the achievement for which the prize is offered. With adequate instruction and inspiration the results of their endeavors in the form of dollars and cents, as well as in pleasure, should be sufficient to induce the maximum effort. The desire in children for notoriety and for praise, however, should not be overlooked, and just recognition always should follow achievement.

The idea of inducing children to do things that they should do for their own good always seems strange, and in some cases has become an absurdity. It may be contended that children will not voluntarily conduct garden enterprises without some extra inducement. The extra inducement should be in the form of assurance that they will get reasonable returns for their efforts. If a profit of from $25 to $50 is not sufficiently enticing, the offering of $5 or $10 in prizes surely would be unavailing. There may be some justification for offering prizes for superior service in the matter of civic improvement or in anything for the public good. The personal gain in this case is more remote and the child is merely rewarded for services rendered to the community. Even in this instance a better opportunity for a lesson in citizenship is afforded if the children can be sufficiently interested in the welfare of the community to offer their services without hope of reward.

Badges, pennants, trophies, etc.—The use of badges that represent achievement has been productive of much good by way of maintaining interest. The chief value of badges, as compared with prizes, is that they emphasize the achievements for which they stand and that the benefits are more generally bestowed. Most children value a badge of achievement that can be displayed as highly as a $5 prize that must be carried in the pocket, where no one can see it. The use

of the badge makes it possible to encourage each child who achieves success in gardening, and the degrees of success may be indicated by different types or grades of badges.

Badges, to be of most benefit, should be progressive in character; that is, they should be made in series, each one of which furnishes a different degree of recognition. The four-leaf-clover badge, commonly used by the boys and girls clubs, represents this type. The child who successfully completes one season's work is supplied with a badge having a single leaflet on the clover stem. On the completion of the second year's work it is exchanged for one with two leaflets, and so on until the four-leaf badge has been achieved. These badges come in bronze, silver, and gold, so that, if desired, a few of the higher-grade specimens may be bestowed upon the pupils who have made phenomenal records. A similar badge is in use in Cook County, Ill. This is a small bronze badge in the shape of a star. In the ring encircling the star are 10 holes, into each of which may be inserted from time to time a small enamel star. This allows for two or more achievement stars in a single season and yet extends the influence of the reward over a number of years.

School pennants and trophies for gardening achievement are used sometimes to arouse a spirit of friendly rivalry among schools or classes. This is a commendable form of competition, but demands a liberal display of administrative ability to promote it with equity and to prevent antagonism. Children should be given to understand that the contest will be abandoned upon the first indication of irregularity.

School credit.—The subject of school credit for home-project industrial work has provoked much discussion during recent years. The schools have become so accustomed to the credit system that there is a common belief that the child's educational achievements, whether accomplished at home or at school, should be accurately measured and accredited. The growth in complexity of the school system has made school credit so ostentatious that children have come to regard it as the main purpose of education. This inclination to magnify credit is not restricted to the elementary schools, but extends through the high schools and colleges. It would seem very desirable if some way could be found to direct attention to the real purpose of education. In other words, the schools should aim to prepare young people for definite kinds of service and endeavor to change the pupil's focus from the school credit, the school standing, or the diploma, to occupations, or opportunities for service, for which they are being prepared.

School credit, of course, must be accepted, but less rather than more attention should be directed toward it. Concerning credit for home-

project work, there seems to be no valid reason for controversy. Most of the confusion has come from trying to graft the new system of training upon the old. When schools come to acknowledge the new system and keep it distinct from the old, there will be no more embarrassment concerning credit. If credit is to be given for school work, it certainly should be given for home work of a bona fide and approved nature. But there is no necessity for trying to compare "home credit" with ordinary school credit. One may be as good, or better, than the other, but they are different. Consequently, there should be two parallel systems of credit. In Cook County, Ill., the schools make use of the many-starred achievement badge, as previously described. They give the children full credit by means of these badges for the successful completion of all home projects approved by the school.[1]

Gardening clubs and associations.—There is a tendency nowadays to introduce the social idea into all human activities and to give up individualistic notions. The rural boys and girls have banded themselves together by means of the agricultural and home-making clubs. This movement started apart from the school, but has later come into the school and has brought the club idea with it. It may be more important for boys and girls of the country to organize clubs than for those of the city, but even here there are many advantages. The club spirit appeals to young people and serves to increase interest and to stimulate effort. Each school may have its gardening club, and the clubs of any city may combine to form either a consolidation or a federation. Such organizations may emphasize either the social or commercial interests of its members. The smaller cooperative associations as educational features are especially valuable. As suggested under another head, these associations may undertake large garden projects, using borrowed money, if necessary, to finance the work. There are various ways in which the club idea may be made to promote gardening and to contribute educationally, socially, and economically to the welfare of the children.

Exhibitions.—Probably there is no better way to intensify interest in gardening than by the holding of exhibitions for the purpose of displaying and disposing of the products of the children's gardens. Too often, however, the educational features of the work are overlooked, and the exhibitions in such cases are nothing more than heterogeneous masses of garden truck. An exhibition, to serve its full purpose, should be so arranged that all entries in the various classes are grouped by themselves. In this way the individual entries may be compared, and anyone may see the superior quality of the successful exhibits. In addition to the classes for each kind of product, there may be one for general collections. This should

[1] See Bull. 285, U. S. Dept. of Ag., "School Credit for Home Practice in Agriculture." F. E. Heald.

give each pupil a chance to make an elaborate display of the products of his garden, and thus furnish the chief inspirational part of the exhibition.

The educational value of the exhibition is dependent not only upon the arrangement of the displays, but greatly upon the character of the judging. The characters that count most in the market are the ones that should receive especial attention in judging. While there is more or less interest displayed over the largest potato or the largest squash, such exhibits have no educational value. The largest potatoes are not the ones that bring the highest price on the market. With most garden products the element of uniformity—uniformity of size, of shape, and of color—counts most. The chief value of exhibitions, from the educational standpoint, therefore, is the opportunity afforded to acquaint children with market requirements.

Exhibitions also serve a useful purpose in providing a market for produce, but this is a feature often overlooked. Some schools make a practice of holding an exhibition every month during the garden season. This furnishes a means for disposing of surplus products and keeps the interest at a high pitch throughout the season.

The awards of merit should be in the form of ribbons or cards, rather than money, and in this way obviate the danger of encouraging dishonesty.

OVERCOMING OBSTACLES.

There have been many and varied reasons offered for failure to introduce gardening. Among those that have been presented by superintendents the following may be mentioned: "Can not get support of board," "unable to obtain funds," "town too poor," "more teachers and new buildings are our greatest needs," "unable to secure teachers," "work controlled by other city departments," "local organizations would be offended if school should take over any part of their work," "no available land," "mosquitoes too troublesome for children to work in garden." Some of these are valid excuses for a temporary postponement, but none of them raise difficulties that are insurmountable. The thoughtful superintendent will realize that the only way to bring about reforms is to convince the public that the work is necessary and desirable. The means will work themselves out just as they have in all other needed reforms. School boards will approve and provide the necessary funds; poor towns will learn how to become prosperous and how to take care of growing needs; teachers will be prepared when the demand comes; people will give the school an opportunity to direct all educational movements; means will be provided for bringing the child in contact with the soil; and mosquitoes will not trouble children any more while at work in the garden than while at play on the street.

Teachers also make their excuses. Some say that their superintendent is opposed to gardening. Others say that their principals claim all credit for achievement. Many say that their efforts in outside work are not rewarded. Even in the face of these and many other obstacles, teachers have accomplished much. The conscientious, untiring, and oftentimes unappreciated effort of individual teachers has done more to develop favorable public sentiment toward gardening than any other single agency.