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Otis W. Caldwell
Eastern Illinois University

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THE SCHOOL GARDEN

By OTIS W. CALDWELL
Instructor in Botany

The attempt to enrich and enliven the course of study of our public schools has resulted in the introduction of a good many things other than the three traditional subjects of instruction. This attempt first expressed itself by adding subjects to those already in the course of study, and continued along that line until to some persons at least, the day's work seemed very greatly overcrowded. Then, in addition to the new subjects came various school auxiliaries, all related more or less directly to the class work, but requiring some of the time of the school. Probably these auxiliaries have found their way into the high school more often than into the grades. To such an extent is this true that in some high schools there is danger that the auxiliaries will occupy the main attention of the pupils while the object that the auxiliaries are designed to assist—the class-room work—will become subordinate.

Against these introductions the cry of "fad" has often been raised, not always without reason; indeed, it might have been

better for some schools had the cry been sounded with more vehemence. For whenever we lose sight of the fact that the grade of excellence of the school is determined by the quality of work done in the class room, the school is in serious danger of disruption. Additions to the curriculum should at least not divert from the fundamental work of the school, but even more than this, they should be contributory to it. The School Garden idea is destined to be classed as a fad in some localities, but it is opportune that we consider the general significance of the proposition.

I. DEVELOPMENT OF THE IDEA OF THE SCHOOL GARDEN.

If any collection of plants specially prepared for educational purposes constitutes that for which the expression "School Garden" stands, the idea is older than the Christian era. The Persian King Cyrus organized regions "in which the sons of noblemen were instructed in horticulture," and during the reign of this king, gardens for educational purposes were also established by other persons. From the time of Cyrus and his contemporaries until the sixteenth century there was practically no work done along this line. Comenius, the Italian educator of the latter part of the sixteenth and early part of the seventeenth centuries, following the work of some of his contemporaries, wrote in his *Didactica Magna*, "A school garden should be connected with every school, where children at times can leisurely gaze on trees, flowers, and herbs, and be taught to enjoy them." But although numerous attempts were made, the seventeenth century idea did not become well established until in 1869 and 1870 when, largely in response to the work of Erasmus Schwab, there was passed in Austria, Imperial legislation which required that there should be in connection with each school a garden suitable for instruction in natural history. Considerable aid was given to the development and popularizing of proper standards of

work through the presence of a fully equipped school house and garden at the Vienna exposition in 1873. Many thousands of such gardens now exist in Austria as the result of this work which began but a little more than thirty years ago.

In some of the larger German cities, school gardens were established as early as 1840, but these assumed no extended significance until very much later than this date; indeed, it is only within the last fifteen years that they have become at all common for both large and small systems of schools. In the provinces of Saxony, Thuringia, and Baden, the school garden is a common factor in the school system, and in Berlin, Leipsic, Dresden, Breslau, Hanover, Munich, Karlsruhe, and many other cities, extensive garden plans have been developed. So far, however, the German Empire has not attempted to regulate by law this feature in its schools, and consequently there is the widest variation in the purpose, quality, and attention given to the work. But a good percentage of the schools is in advance of legal requirements, and it will doubtless be but a short time until the ideas relative to the garden that have already been found helpful will be made an organic part of the government school system. In addition to those used for the grade school work, most of the normal schools in Saxony and some similar schools in Baden and Thuringia are provided with gardens used for the double purpose of instruction with the normal school students, and demonstration of that which is to be used in actual work with children.

In Switzerland the agricultural society has been active for twenty years in recommending work along this line, the General Government having made an appropriation of a sum of money to be used in establishing gardens. Model school gardens exist at five prominent city normal schools, and in connection with numerous elementary schools. Belgium has a

law making the teaching of horticulture compulsory, and the Government gives more than a thousand dollars annually as prizes to the students for excellence in horticultural work. Sweden, France, England, and Russia have been interested in school gardens for more than three decades. In Sweden especially has the work been well organized and found highly profitable, there being in 1894 four thousand six hundred seventy school gardens. The governments of nearly all the European countries contribute considerable sums of money to the support of these gardens, and teachers are usually required especially to equip themselves for teaching the work involved.

With respect to the school garden the United States has done comparatively little in following the lead of European nations. Massachusetts has done more than all other states combined, the Massachusetts Horticultural society having made this possible by giving constant support in direct aid and in prizes, by assisting in replying to the cry of "fad" raised on every hand, often by those really most interested in school work, by helping to interest those in positions of authority, and in many other ways. Consequently school gardens now exist in connection with the state normal schools at Hyannis and Framingham; Boston has numerous plots of ground so used, and several other cities in this state have found the idea helpful in their school work.

In various other parts of the country, gardens are being developed. Prominent among these attempts should be mentioned those of the National Cash Register Company of Dayton, Ohio, which has done some highly important work with groups of boys under its control; the State Normal School, at Normal, Ill.; the city schools of Rochester, N. Y., and Trenton, N. J.

II. PURPOSES.

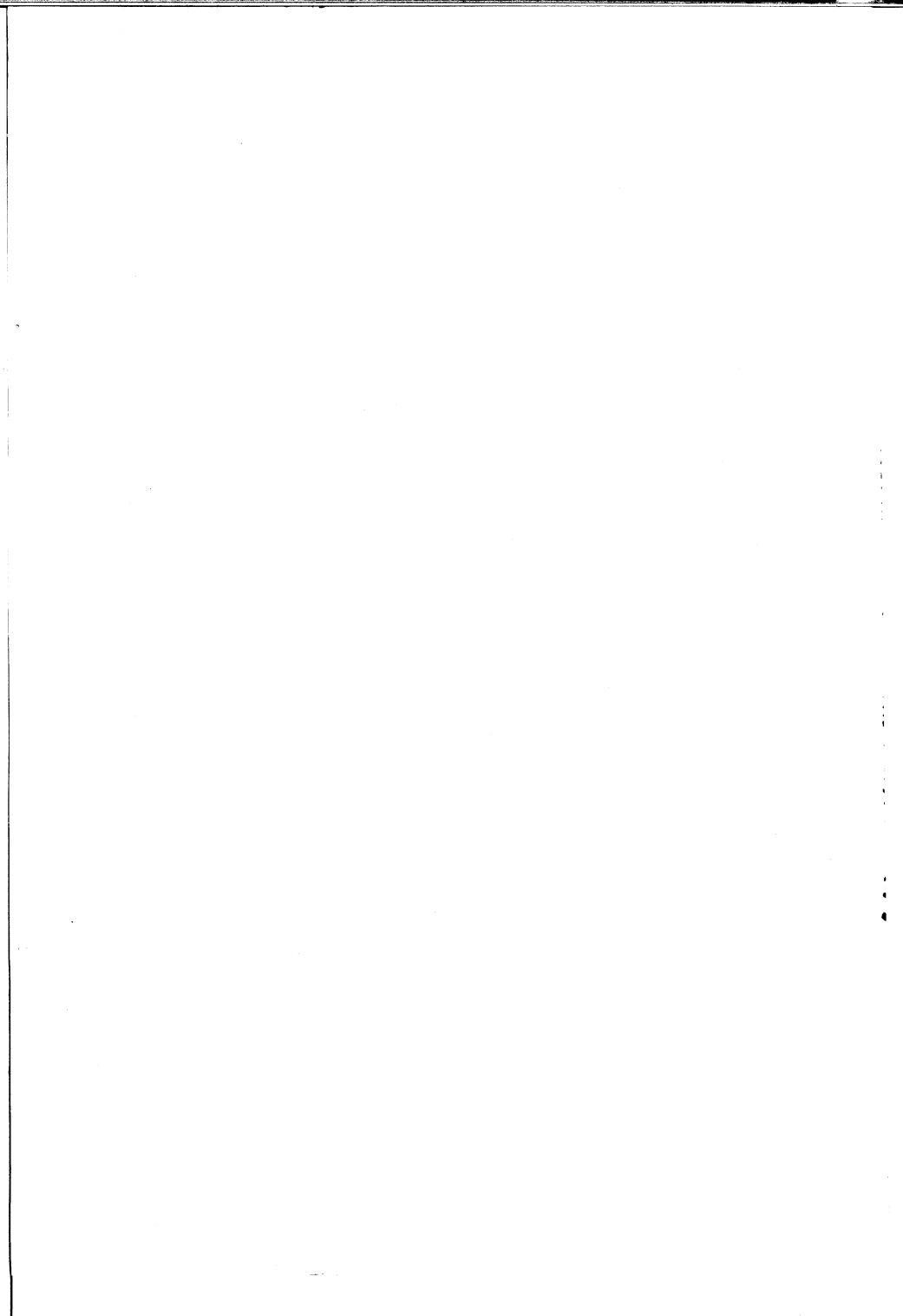
The chief end in view in the establishment of a school garden is sometimes determined by the leading industrial interest of a country, sometimes by educational interests, often by aesthetic interests, and sometimes is determined by a combination of two or more of these points of view. The ancient Italian gardens, for instance, were for aesthetic purposes purely, and in them plants were arranged to produce those effects that were conceived by the art of Italy to be most beautiful. Throughout the civilized world, there exist many such botanical gardens, most often arranged as parks, that are developed from the same standpoint as the older Italian gardens. Whether these should be formal and artificial or as found in nature is determined usually by the builder's notion as to which is more beautiful. In either case the chief aim is to construct something that shall minister to an aesthetic, rather than to an educational or economic, development. Such parks or formal gardens are often designed for purposes that are not to be included under the general topic of this paper.

In many places, on the other hand, gardens are established primarily to teach certain lines of industrial life. A community may be so closely dependent upon a certain kind of work that the inhabitants look with favor upon a feature of the school program that teaches the pupils the rudiments of the work that gives them their sustenance. In Holland, Belgium, France, and Sweden, attention is directed rather definitely to the main industrial interests of each country respectively, an avowed purpose being to teach the children how to make a living.

A purpose prominent in many places is to furnish the schools with suitable plants for class work and room decoration. In such places the garden is cared for by competent

persons who grow most excellent specimens of all the kinds of flowering plants that will grow in that particular climate. The teachers send their orders for needed specimens to the gardener, and by him the plants are prepared and distributed to the different schools. In Hanover, Leipsic, and other German cities, lists are published weekly, announcing the plants that are in flower and ready for school use. It should be said in this connection that in many places where the school garden is used, the older idea prevails that plants are to be studied only by examining the flowers and leaves, and by using these as means of finding their names and classification. In some German schools, in that part of the curriculum corresponding to grade work in the United States, considerable study is made of the systematic analysis and grouping of plants, a kind of study rapidly disappearing from our grades and high schools. That the study of the growth and life habits is far more interesting and immeasurably more valuable educationally, is just now beginning to be discovered in some of these schools.

In European countries most of the larger school gardens display plants in such a way as to show the various artificial and natural groupings for observation and study by the pupils. In some places one finds nearly all of the plants which can be grown in that climate, arranged in systematic order, each kind being properly labeled. One section is often given to the plants indigenous to the general region in which the garden is located, and these are studied to give the pupil acquaintance with his native plants. Garden and field plants are usually represented in separate groups, and are arranged so that each pupil may become acquainted with them. Groups of fibre plants, including flax, hemp, banana, cotton, pineapple, the century plant, and others, prove of great interest and profit when the pupils are taught that



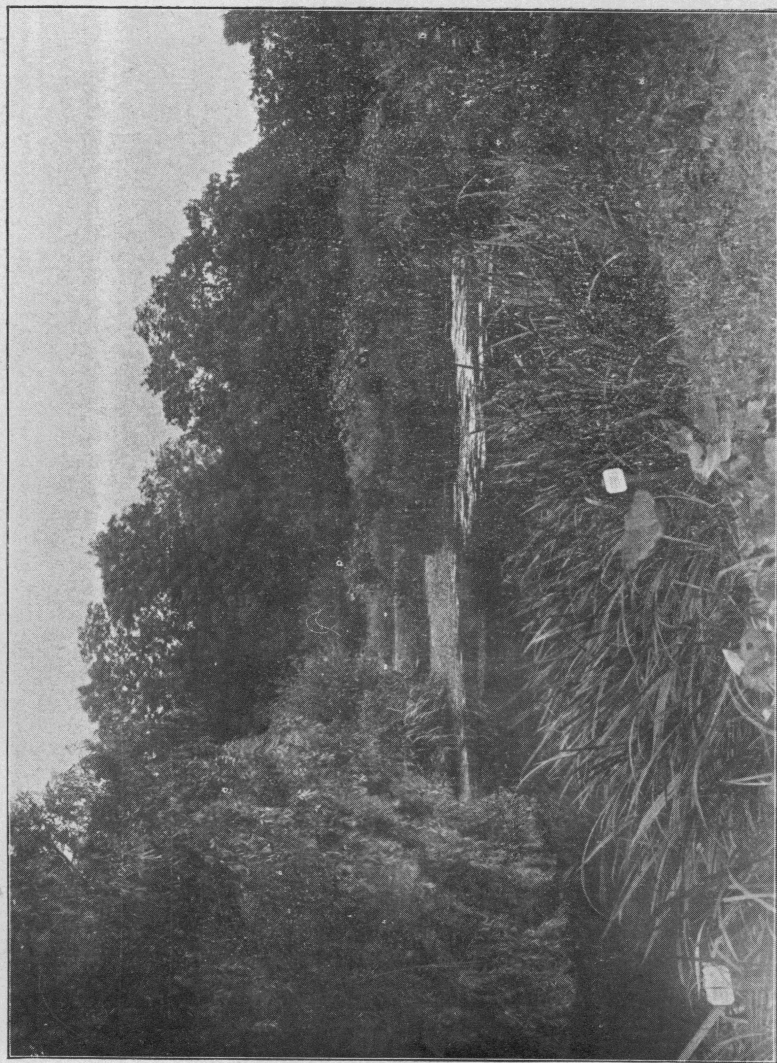


PLATE I.—Swamp and water plant section of the school garden at Leipsic, Germany.

these are sources of the fibres of commerce. The section given to poisonous plants includes many that it is well for each child to know in order that he may protect himself against them; and the group of medicinal plants if thoroughly studied, will make each child reasonably intelligent regarding the sources of most of the curative drugs.

The groups within the garden may be arranged as the individual plants are associated in nature, and thus be of interest and of much educational value. A miniature "meadow" is often used to illustrate the conditions obtaining in relatively flat and exposed areas. The plants that are grown illustrate the structures and habits that must be had if they are to live successfully in such places. What may be done in illustrating what water plants are and where and how they grow, is shown in Plate I. The peculiar ways in which plants live in stony regions, both shady and moist, and exposed and dry, are demonstrated in several of the largest gardens.

It will be observed that in all these purposes mentioned above, the pupils are to see and study the plants with this study as an end in itself. In these cases the pupils have nothing to do in controlling the conditions in which the plants develop. Study through observation is the main purpose in most of the German schools, as well as in some of those of Austria, France, Sweden, and England. Often, however, the general purpose is based on the idea that the actual work of the garden should be done by the pupils, and the area of ground to be used is divided into plots where the pupils are to grow their own plants. Here they are to obtain some knowledge of the elementary principles of biology from actually dealing with them. The soil is studied, since it is one of the factors essential to the growth of the plants. The pupils must learn to recognize good soil from poor, and must learn how to manipulate the poor soil in order to make it fertile.

Different poor soils will demand different treatments, as the causes of their poverty vary. The pupils need to know about the requisite water for proper growth of the plants that they purpose to grow. They must know the kinds of plants to which certain soils are adapted, and futhermore the kind and amount of care that the various plants must have if they are to be most successfully developed. According to this general purpose last outlined, the garden is a place where the pupil works with both his mind and his hand. He is responsible for the use of the plot of ground assigned to him. He is to form acquaintance with a comparatively small number of plants, the emphasis being placed not on the number of plants that he is to know, but on what he can learn about how they grow, through his own efforts in growing them. Not only is his mind to be exercised in studying the adult plants, but his body and his mind are to be used in a small enterprise in which he himself is, in a way, both judicial and executive. He is to understand that so far as his own plot of ground is concerned, failure or success is, in a large measure, with him.

The right kind of competitive spirit may be fostered by means of comparisons of various plots, and the results of carelessness, laziness, and bad judgment will thus be shown. Also where the pupils are to be allowed to give away, sell, or take to their homes the products of their work, there is developed a sense of proprietorship and ownership that is extremely important for every child; at the same time the property rights of others must be respected. Furthermore a knowledge of how our vegetables, cereals, and flowering plants grow, of the time required for maturing, of the method of handling them when mature, of the commercial value of the amount grown on a given area, of the amount of work, time, and material required to earn a dollar, are things to be made prominent in planning this work for children. It seems reason-



PLATE II.—A district school house and garden. The teacher and pupils work in the garden, the products belonging to the teacher.

able that many of the young people of the country would have less tendency toward the spendthrift habit if they had been brought up to know something of the value of money by earning a little of it. It is possible that in many places the present custom of giving money to children rather freely would make it difficult to emphasize properly this feature of a school garden. It is also possible that in some places this feature would need no special emphasis. In any case the amount of ground to be assigned to any one pupil would not be large enough to make this element a prominent one; but the element should be recognized, nevertheless, and in some localities it will be found of essential importance.

Associated with the idea that the garden should be a working place for the pupils, are other very important factors. For example, the simple tools used in this work must be kept in proper condition, and when not in use, must be stored in a good place provided for that purpose. Tools carelessly handled or used when dull do not give good service and render it less probable that the best results will be obtained from the soil. A knowledge of proper adaptation of means to the end desired is developed as certain tools are found to be best fitted to certain pieces of work. Such knowledge helps not only for the immediate needs of the garden, but will help the pupil to consider any problem that he may meet, and to adapt to it the means at his disposal. This knowledge, and the habits formed in obtaining it, will certainly help to correct the far too common intellectual attempt figuratively "to dig post-holes with an ax and to use a spade in felling trees."

Another very desirable purpose is realized in the result that is obtained when the garden is kept in proper condition. The plot of ground assigned to each pupil must be kept neat and free from undesirable plants. For each of the small plots to

be used economically, each plant in it must be placed with reference to a definite plan for the entire plot. Haphazard planting nearly always wastes the available space. Neatness and orderliness are necessary, however, from the aesthetic as well as from the economic point of view.

A purpose of great importance is served by the exercise obtained from the garden. The body is exercised primarily in order that work may be done. The exercise obtained through this work has advantages over class gymnastics in that it is in the open air, and is obtained not primarily for the sake of the exercise but in course of the process of obtaining other ends.

It would seem that those gardens which are planned as working places for the pupils are more in accord with our best educational thought, and at the same time afford nearly all the advantages that come from those maintained for other purposes. If the garden is primarily to supply flowering plants for identification in the class-room work of the higher grades and the high school, these purposes last mentioned cannot be realized. But those persons best qualified to judge on this matter have long since ceased to believe, if indeed they ever did believe, that such class-room work is desirable. It does not represent the study of living plants; consequently at present it need not be given extended consideration in determining the proper purposes to be held in mind in establishing a school garden.

In work with plants as in other school work the fact should always be kept prominent that the pupil is to be the most active factor. We can put things in his way to help him develop properly, and keep from him some of the things that fail so to help him; but we cannot do his development for him. If he is to have knowledge of living things, of the elementary principles of life, of industry, of economy, of beauty, and justice, he must

grow into these things by means of first hand experience with them. To obtain this growth, and to eliminate some undesirable things now in the school, the school garden should certainly prove efficient. That it is the "panacea for all educational ills" cannot be hoped.

III. GENERAL METHOD OF WORK.

The purposes that the school garden is designed to serve must in a large measure determine the method to be pursued. If portions illustrating the various habitats in which plants live are to be arranged, a relatively large area must be utilized, and this must undergo the modifications necessary to make it illustrate such earth and water areas as are possible within the region. There may be constructed miniature swamps, rocky areas, exposed meadows, shady and moist fern cliffs, etc. Or our areas may be made to contain groupings of plants, as classified according to a natural system; or according to their properties, as poisonous, fibre, medicinal, etc.; or according to the countries from which they come. The garden may be a flower garden only, ministering mainly to the aesthetic sense, or it may be a place where the pupils and teacher may work and grow various kinds of plants. If these plants are grown for the teacher or school, (see Plate II) one set of needs is prominent; if developed for educational purposes purely, other features must be emphasized. It may be that in a large school system it is best to have some portions arranged to illustrate the natural growing habits of as many wild plants as possible, but such should not be the chief feature of the garden. In all smaller school systems, and serving as the basis of the work in the larger ones, should be the idea that the garden is a working place where the pupils may grow plants. The concluding discussion assumes this to be the proper point of view. Some of the features of the garden work when this point of view is held are shown in Plate III.

When a separate plot of ground, even though small, is assigned to each pupil, it is possible to require that his work be independent. The effects of negligence can be readily pointed out and their correction insisted upon. With a plot entirely to himself the pupil may, under judicious supervision, select at least a part of the plants that he will grow, and decide how he will arrange them. The desirable effects from the individual plot are more readily obtainable if the pupil is to be sole owner of all that he produces. It lends zest to his work by satisfying his desire to possess, and gives him something to anticipate as the product of his own enterprise. Should interest fail in spite of all the inducements, such would not necessarily be an argument against the work. Usually, it is believed, the work will interest sufficiently to make it necessary only to direct; but should it become necessary to require emphatically that the work be done, we must remember that some of the best features of an education come from doing things that we do not like to do. Whether or not a piece of work is interesting is not always a test as to the value of doing it.

In the beginning of the work it should be decided how many persons are to be assigned separate plots, or how many groups, in case several are assigned to a single plot. This being decided upon, and the size of the plots determined, the ground should be measured off into areas and staked with good strong stakes, each having a smooth face so that the name of the possessor of the plot may be indicated thereon. Space for walks should be left between the plots. If possible the entire area should be surrounded by a fence, preferably of some low shrubbery. If the area is surrounded by a board or wire fence, an inside fence of low shrubs adds much to the general appearance of the entire garden. This fence may

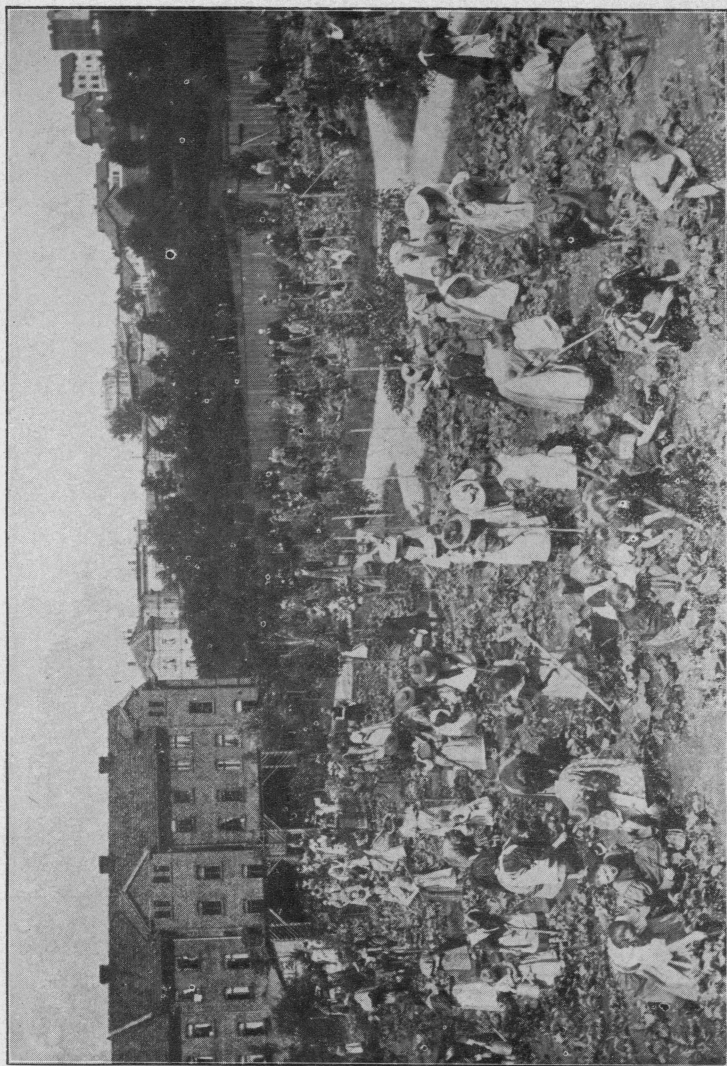


PLATE III.—Public School garden, Possneck in Thuringia, Germany.

consist partially or entirely of low fruit trees and such plants as raspberry, currant, and gooseberry bushes. These shrubs and trees should always be kept low enough to prevent shading the plants in the plots, unless distinctly shade-loving plants are being grown. It should be the duty of one group of pupils, each pupil being assigned to a separate part, to care for the shrubbery, by keeping it properly trimmed and cultivated, and by removing the weeds.

For the youngest pupils the plowing or spading must be done by an assistant, but all the older ones should spade the earth, care being taken by those in charge to see that they know just how it should be done. When this is finished each pupil by use of a hoe of medium or small size, should thoroughly prepare the surface of the ground. Great care should be observed to have the plot neat on the surface and along the edges. Too much emphasis is not likely to be placed on keeping the areas and walks in good condition.

When this work has been done, the seeds or bulbs may be planted, or the pupils may transfer the young plants that they have started in the school room or in their homes. It may be best first to have pupils plant these things in a part of their plots according to their own notions of how they need to be placed, and then to give them detailed directions concerning the planting of the others. This will afford comparisons as to the advantages of different kinds of planting. Brief notes should be kept describing what is done in each plot, and these should be used for reference and comparison. The appearance of the seedlings and the development of all the plants should be carefully observed. Many interesting discussions will occur concerning the appearance of plants just developing from seeds, and many questions will arise as to how the plants are to be cultivated. In all of this the information given and the suggestions made should be attended to

exactly as in any other good teaching; consequently that phase of the question needs no especial discussion at this time.

IV. FURTHER APPLICATIONS TO OUR OWN SCHOOL SYSTEM.

It is to be expected that as this subject is presented, along with favorable comments will be found such objections as, "Of what use is that to me in my work?" "How can a large system of schools manage such an enterprise?" "How about the small village school, and the district school? Here the pupils know a good deal about gardening from first hand and often unwilling experience." "Who will supervise the garden?"

To many such questions answer has certainly been made in the preceding discussion. Doubtless in many large systems of schools it will be found desirable to have the work in but two or three grades. Such is certainly better than to have several pupils assigned to a single plot of ground. Probably the plan of having only a part of the pupils work in the garden during a given year is desirable in all schools. The years represented by the third or fourth grades, the seventh or eighth grades, and the first year of the high school are well adapted to this work. During the earlier years the pupils become interested and see some of the significance of the work. In the latter grades mentioned, important results are attainable that are not possible in the lower grades. If abundant time and opportunities are at hand it may be desirable to carry the work through all the grades.

It does not follow necessarily that because the pupils live in an agricultural region it is unprofitable for them to do the work outlined above. Although such pupils have needs that are unlike those of the pupils living in large cities, all the pupils need to have a much more intelligent interest and love for horticulture than is now common. Competitive attempts

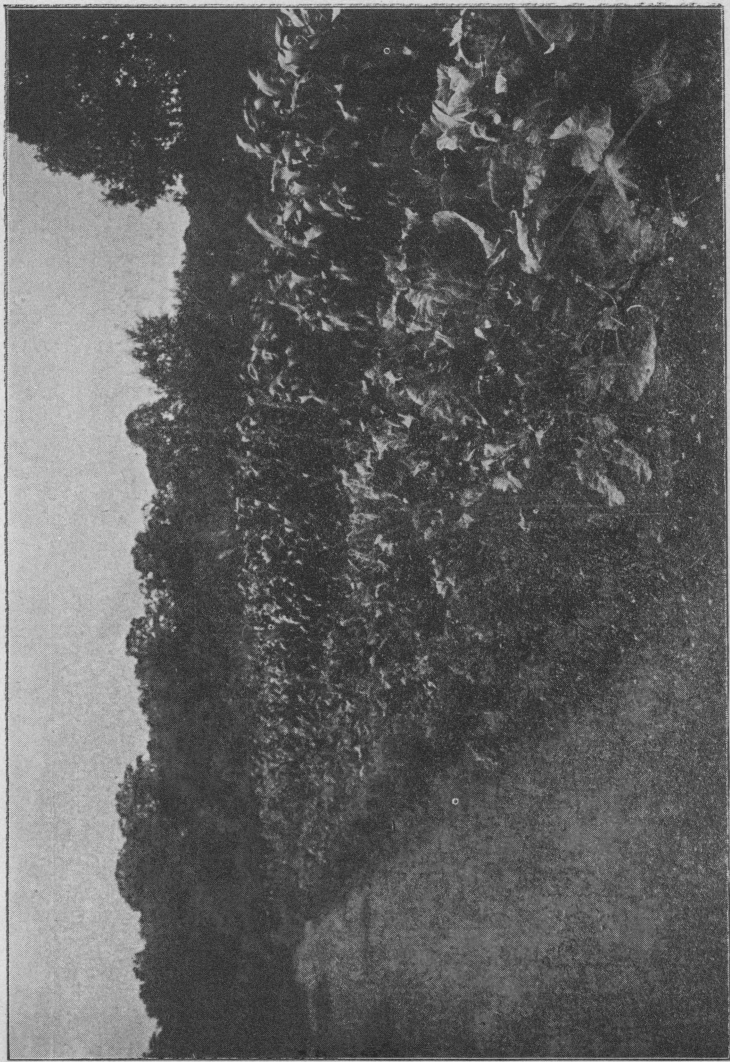
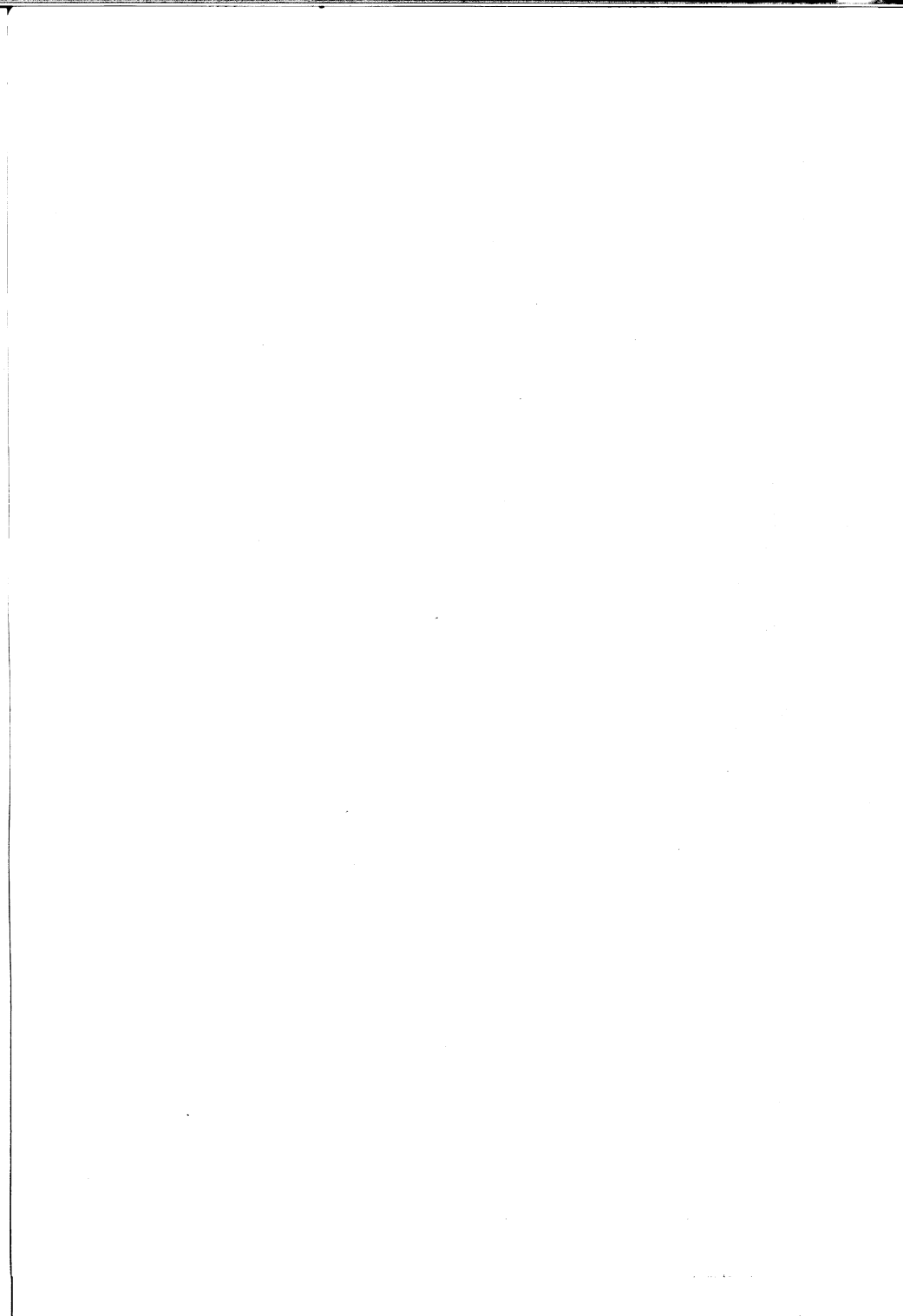


PLATE IV.—Section of agricultural plants (corn, cabbage, lettuce, etc.) in the Leipsic school garden, also showing walks and shade trees surrounding the garden.



on the part of the different pupils will often bring out many things unknown to them before, and will enlist the interest of the adults of the vicinity. In addition to growing the plants common to a region, attention may be directed to a few plants common in the industrial life of other regions. Such a plan will give opportunity for obtaining a knowledge of the proper methods of growing plants, and at the same time will possess the added interest associated with the developments of forms not known before. (See Plate IV.)

In any system of schools, district, village, or city, excellent results can be obtained by growing those things that are purely decorative. Beds of foliage and flowering plants, a few trumpet creepers, rose bushes, spirea, and other shrubbery would add wonderful enlivenment, interest, and beauty. Potted plants that grow well in the earth may be started in the school room or homes before the weather will permit them to grow out of doors. By this means excellent effects may be obtained early in the season. In this connection it may be said that in some foreign schools each pupil is required to grow a potted plant in his home or in the school for a period of six months; at the end of this time it becomes the property of the pupil. Should the first attempt fail, another must be made until success is had.

The space for a few beds of flowering plants can be found in almost every school yard. The fences and trees that are, or at least should be present, afford support for vines of various kinds. The plants of the vegetable garden, the cereals of the field, those of distant countries, the fern beds, foliage plants, flowering plants, and various kinds of shrubbery offer endless wealth of material from which to select. Lack of training on the part of those who must direct the work may often prove a serious obstacle,—but what school interest upon its introduction has not encountered this same

obstacle? The occasion for using the knowledge is often the stimulus for obtaining it. The amount of information and training absolutely requisite to the production of fairly good results is not large, although as with any other line of work, absence of preparation cannot give good results. No one should attempt this work unless he has a definite plan as to that which he proposes to do. The area used may be small, in fact should be with the first attempt, and this area may be used for the growth of a single kind of plant, but the plan must be definitely organized and must be followed with tenacity and industry.

Throughout our country we have many farms illustrating failure in proper planning, and in attending to plans when once formed. Our school garden may become as bad as these neglected farms, or even worse proportionately if the work is not done in an economic and industrious way. The teacher who begins this work must follow it vigorously in the face of many discouragements that are sure to arise.

From what part of the program of the school shall the time be taken for this work? It need not take any time from the other subjects of study. After the ground is prepared and the first planting done, a half hour used two or three times each week will be ample, and will often give superfluous time. Economic expenditure of time and energy is one of the things to be taught, and the recess periods, or a little time before or even after school will suffice in case time cannot be taken during the regular work of the day. The class period often given to nature study or elementary agriculture could be legitimately and profitably spent in this work. The history of the garden work evidences the fact that the pupils usually will gladly give time and money to the care of their garden plots, and such work is far better than the uninteresting time killing often forced upon them during so-called rest

periods. The problem of how to obtain the time offers little difficulty.

A more serious question is presented when we ask concerning the disposition to be made of the garden during vacation time. With our three months and more between spring and autumn terms of school, this obstacle becomes distinct from the sort of one in those European countries that have from four to six weeks summer vacation. Doubtless sometime we shall have a very much shorter intermission between school years, but we cannot hope for immediate solution of the problem in this way. It is true, furthermore, that some of the best time for doing the garden work is occupied by this long vacation. In city schools the children can be assembled at stated times to care for their garden and can be accompanied by a superintendent or teacher who is at hand. "But," some one says, "we have no jurisdiction over the children during the summer vacation and cannot get them to come." The children will come and we shall need little jurisdiction. The history of the attempts already made, indicate that the trouble is not to get boys and girls to assign to all the plots, but to get enough plots for all who wish them. For city boys and girls, especially boys, I believe some summer work regularly planned and regularly executed would be a most helpful and welcome thing, and would do for them a little of what the summer work on the farm does for country boys and girls.

Our city school boards would, in my opinion, make a very wise expenditure of money by providing a supervising teacher and a place where some of the pupils could be occupied in this way during a part of their vacation time. Doubtless the training thus given the boys would lead some of them soon to occupy themselves with much larger areas and to obtain much larger and more remunerative results than are possible

in the plots assigned to them. However, it must be kept clearly in mind that the primary purpose of such summer work should be not to train gardeners or horticulturalists, but to give healthful, educative employment, to teach habits of industry, interest in and knowledge of living things. Many other desirable results will accompany those mentioned.

In rural schools it will probably be found desirable to grow those things that require least care during vacation,—shrubbery and such things in general as will serve to beautify the school ground, rather than the economic plants that are of greater relative significance educationally to the pupils of city schools. But, besides these there should be some beds of flowering plants, and these should not be allowed to suffer from lack of attention. It should be an easy matter to find in the neighborhood, school officers or young people enough interested in the school ground to give the small amount of care requisite to caring for these things during the vacation time. In some localities there are magnificent farm houses and barns standing in beautifully kept plots, emphasizing the fact that the places where the children are educated are ugly with weeds and general negligence. A little care given the school ground during vacation would enable teachers and pupils to make it beautiful and useful during school days. The lack of proper care during vacation time should not be urged as an argument against any proper use during the days of school.

It may be urged by some opponents of the school garden idea that lawless individuals might destroy the plants grown in school gardens in either rural or city districts. Such may be the case. We are not yet a fully civilized people, but we are constantly moving in the direction of better things. Ideas concerning the rights of others have advanced very greatly during the past twenty-five years, and there is little reason

why in this case we need fear any such dangers. If difficulties arise, the proper and fearless disposition of a few cases will form public opinion into the needed defense and no further annoyance need be had.

Finally, it should be said that the school garden plan is relatively new, and before its adoption it should be carefully considered. Associated with it are numerous unsolved problems, some of which if unrecognized might bring failure. The kind of work needed in one region or in one school system is often unadapted to another region or system. Careful study of the conditions must have persistent and consistent effort following it to its logical conclusion. Nowhere could negligence of work be more conspicuous than here.

But if properly managed, it is believed that the school garden may be the means of doing very much for the boys and the girls. It should maintain that normal interest in nature which is often removed because at six years of age the child is put entirely into book work; it should help the pupil toward an appreciation of the earth and of agriculture as the source and the means of all wealth; it should teach industry and economy of time, space, and materials; it should teach reliance upon the means at hand, and the ability to adapt them to the performance of a definite piece of work; it should be the way through which the pupils approach some of the fundamental laws of biology; it should help much toward an appreciation of the beautiful; and it should assist in developing the many other virtues for which we hope to have our common schools stand.

