

give practical demonstrations in the prevention and treatment of disease, and in the care of children.

Round-table discussions of home problems held as often as once a week will prove beneficial, especially to beginning teachers. A well-kept notebook containing helpful suggestions, tested recipes, and information on securing necessities for the home, will furnish the teacher with valuable reference matter. With the knowledge gained through suggestions and practical work, the teacher of housekeeping should leave the normal institute with loftier ideals and with a renewed determination to do her full duty.

GARDENING AND SCHOOL-GROUND IMPROVEMENT.

By GILBERT S. PEREZ.

The value of gardening and school-ground improvement in barrio and central schools will be determined largely by the attitude of the teacher. If these courses have been presented to him in the best possible manner in the normal institutes, he will return to his school eager to have his classes excel in the work of caring for growing things and beautifying buildings and premises. Instead of being an extra burden in an already crowded program, the school-ground improvement and gardening periods will be a time of physical activity and mental rest, and they will be anticipated with pleasure by teacher and pupils.

Gardening in the primary school is not a textbook course. It is essentially a subject for field and laboratory. The less time spent on textbooks and the more time spent out of doors, the better will be the results. The average garden teacher is familiar with the contents of Bulletins Nos. 31 and 37 before coming to the institute or assembly. What he needs is not more theory, but more experience in field work and in seed germination; more practice in the methods of teaching what he has already learned from bulletins and textbooks, more instruction in methods of making gardening a thing of vital interest to the school and to the community.

As one of the purposes of the gardening course in the institutes is to develop the active and creative instincts of the teachers rather than the reflective and receptive, the person in charge of the classes should be temperamentally fitted to bring out these qualities. It is comparatively easy to find an instructor who can follow all outlines and who can lay out the gardens and lawns in the most exact dimensions; but it is more difficult to find one who can cultivate powers of observation, give the teachers an insight into the methods of acquiring information,

and demonstrate the reason for either failure or success. The ideal instructor should not only know how to make a garden, but he should know how to make things grow; he should be able to connect the work in gardening with real life so as to instill in the minds of the teachers a love and respect for agriculture, a better understanding of the laws of nature, and a greater appreciation of its beauties. Above all, he must not be afraid of the soil: one who says that he likes to teach agriculture but that he hates to put his hands into the mud, is unfit for the work. The instructor in charge of school-ground improvement should have a certain amount of artistic ability, but it is more



Such a school garden as this at Nain, Cavite, would serve well as a model at a normal institute.

essential that he be a man with an eye for order and cleanliness.

It is a mistake to enroll only men in the gardening classes. In a number of schools, both barrio and central, there are none but women teachers to direct gardening as well as other industrial work; and some of the best barrio gardens are those under their supervision.

It would be a good plan to divide the institute work in gardening and school-ground improvement into three parts giving weight to each as follows: Field work, 75 per cent; laboratory work, 15 per cent; and conferences, 10 per cent. The lectures and recitations may very well be done away with entirely, as it requires an exceptionally well-trained teacher to hold the interest of these classes for two successive periods of 45 minutes each.

But it is easy to secure the interest of all in the field, in the laboratory, and in the conferences, where each teacher has an opportunity to tell his experiences and to ask for suggestions concerning the solution of problems which are peculiar to his province or town. Some of the best ideas on school-ground improvement, advanced in the assembly at Manila during the past three years were the result of suggestions made in such conferences. Conditions vary so much in different sections of the Islands that any instruction that is purely theoretical not only fails to satisfy the requirements of the average primary-school teacher, but even hinders efficient work by inducing attempts at projects which are impossible in many districts.

The success of gardening, as of all other courses in normal institutes, depends considerably upon the amount of time spent in outlining the work. All plans should have been made during the first part of January. The circular for the 1916 normal institute in Bohol contained a complete schedule of classes, and a map of the institute grounds, showing exact positions of buildings, gardens and athletic fields. From it the instructor knew beforehand exactly in what kind of soil the garden was to be made and what special provision he would have to make for equipment.

The following materials should be ready on the opening day of the institute: Sufficient nipa or cogon for constructing the roofs of the seed house, rest house and model outhouse; enough bamboo and rattan for 16 meters of bamboo fence and the frameworks of the seed house and the model building; sufficient nails for making seed boxes, tables and floors; 350 linear feet of 1 by 6 inch lumber, and 72 linear feet of 2 by 4 inch lumber for seed tables, molds for concrete posts, and the floor of the model outhouse; two dozen good sharp bolos; garden tools needed for the preparation of model school gardens; carpenter tools; 6 empty petroleum cases with covers, for seed boxes; 1 cubic meter of gravel for walks and posts; 1 barrel of cement; 12 pieces of reënforcing iron, each about 2.35 meters in length for making concrete posts; 1 bundle of 0.5 millimeter wire; 1 cubic meter of sand for the walks and posts; 10 meters or more of standard woven wire fencing. A tract of land 15 by 20 meters in area should be reserved for the model central-school garden; a plot 20 meters square for two home gardens; a plot 12 by 16 meters for two outhouse grounds.

The following will be needed for experimental and laboratory work: Ten ears of corn for exercises in corn selection; 4 or 5 bundles of different kinds of rice for rice selection; 2 dozen

empty tomato cans; a few empty baking-powder or milk cans; a lot of small bottles; a collection of typical soils; 4 small lamp chimneys; iodine, saltpeter, soda, ammonia, caustic potash, denatured alcohol, litmus paper and potassium chlorate for starch, protein, oxygen, and nitrogen tests. The expenses for material and equipment in gardening and school-ground improvement should be borne by the people of the municipality in which a normal institute meets.

It is desirable to hold the institutes in a building and on grounds as much as possible like those of the average primary school. The use of the entire school plant should be given to the teachers, the intermediate pupils being housed in separate buildings during the four weeks. In Loay, the entire school plant was turned over to the principal of the institute to be used as a laboratory and not merely as a place to accommodate classes. This enabled the teachers in methods so to arrange the furniture and pictures that the classrooms became object lessons for the whole teaching body. There was a separate building in which first and third grade model classes were held. Back of this schoolhouse, the barrio teachers in the gardening classes laid out and planted a standard-sized barrio garden and two home gardens; they also built a sanitary outhouse of bamboo. Central-school teachers worked on the central-school garden and grounds. The work given to all was exactly such as they would have to undertake at the close of the normal institute.

The teacher comes to the institute to learn methods, and not to receive instruction in the higher branches of agriculture. Such high-sounding and difficult words as "capillarity," and "productivity" should be reduced to their simplest terms so that they may be understood by all. This applies particularly to explanations in the case of laboratory work during rainy days. It may be best not to use the expression "laboratory work," but to speak of "experimental work," as some may interpret the former to mean difficult investigation in a large laboratory. The statement that the class "will now see how different soils drink different amounts of water," will convey infinitely more meaning than the announcement of "an experiment showing the porosity of the soil." The terms "rich," "poor," "sour," and "thirsty" as applied to soil, are just as effective as "fertility," "sterility," "acidity," and "porosity." Good work in gardening and school-ground improvement awakens the boys and girls to the knowledge that they are members of a community, and that they should do their share toward improving the appearance of the locality in which they live.

It is sometimes said that considerable time is wasted by primary pupils during their gardening period. In a few schools this is true, and the trouble can usually be traced to unsatisfactory normal institute training. During the first part of the year when the pupils are preparing the soil and building or repairing the garden fences, they are usually busy throughout the period; but after the plants have begun to grow and there is less need of labor, considerable time is lost. This can be remedied by giving the teachers at the institutes more experimental work; also weather observation and plant and insect surveys.

The experiments should be conducted in the rest house or in the seed-bed house. This work may consist of tests for protein and acidity of the soil, seed selection, seed testing, and simple soil analysis. If a teacher has a series of such experiments with which to vary the garden work, he will be able to sustain the interest of the pupils, and to keep them busy at all times.

For weather observation only a thermometer and a barometer need be purchased. A rain gauge and a weather vane can be made by pupils. The former need not be standard and can easily be put together from a piece of bamboo about 10 centimeters in diameter, another piece about 2.5 centimeters in diameter, and a tin funnel. A weather chart can be drawn, and four or five pupils should be assigned to make the entries.

Plant and insect surveys in the vicinity of the school garden would add to the attractiveness of the work. A summary showing the varieties of weeds found by different groups of pupils, and the total number found by all of the groups, would be helpful and interesting. The same plan could be followed with reference to insects. It would not be necessary to use any except native names. A list of the birds found near the garden might be made, and their value as allies of man in the extermination of insects, should be made clear.

The marked improvement in academic classes during the past three years is largely attributable to the benefit gained by teachers from observing practice classes in assemblies and institutes. The application of these methods to gardening and school-ground improvement at normal institutes would bring about equally good results.

BOBBIN LACE.

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Division normal institutes are in session for only four weeks and as this does not allow more than twenty recitations in lace