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JUNIOR AGRICULTURIST SUPPLEMENT

A Teacher's Supplement Issued to Further
Agricultural Teaching in Elementary Schools

Vol. I.

No. I.

BULB GROWING.

THE strong man or woman is the one who is following a schedule, is the one who is on his or her way to a definite goal not to be turned aside by environmental factors. The educational system aims to fashion men and women who shall have the power to picture the high type goal and the force to keep directly on the way. This power and force may be materially augmented by giving children definite problems and responsibilities to meet. The country boy has a better chance in this world than a city boy because the farm ever has its variety of responsibilities which the country boy must meet. There is the wood to get each evening of the year. The cows must be milked and the horses fed. In fact, the country boy is brought up to make responsibility-meeting a habit and a responsibility-meeting boy becomes a responsibility-meeting man, a man who follows a schedule easily.

The city home tends to take duties away from children, thus producing men and women perhaps who take the easy way, the way of least resistance. These men and women are going but they know not where. They do little to become good ancestors or to leave anything to the world.

As teachers we can not insist easily on home responsibilities for the children, such as milking the cow, feeding the hens, taking care of the horse, but we can "tie" our charges to a plant for several months of the year.

One hundred hyacinths were grown by the children of the Chico Normal Training School last term. The one in charge of the work was surprised in his remote office one day by a 10-year-old boy who said that he was going away and wished to take his beautiful flower, which was on exhibition at the school, with him. On being asked how he would carry the plant on the train so many miles, he replied, "I will carry it in my hand. I want it very much." To care for this hyacinth day after day, to see it develop into a beautiful blossom through his efforts, to feel that it was his meant much to the boy on his way to be a man.

The more we see of bulb growing the more we feel its potentiality. We should like to see every child in California plant, care for and bring to blossom at least one hyacinth.

Bulbs, particularly hyacinths, bring quick, definite, satisfactory results. Teachers, read the article on bulb growing and interest each child in your school in growing a bulb at home or at school.

We advise growing the bulb at home. The vision of the home has long been dim and hazy in the eyesight of the educational system. In its building it has given little attention until recently to the fundamental needs of the home. Health versus history, cooking and sewing versus spelling, manual training (with the home needs in view) versus square and cube root, agriculture versus grammar—which shall they be? Any opportunity to direct attention to the home or to put a premium on home work should be accepted at once.

Selection of varieties.—Hyacinths and narcissus do very well for school and home purposes. They are hardy and give excellent returns. Daffodils and Chinese lilies are very satisfactory for early blooms. They may be brought into flower at Christmas time. Send to seed houses for bulb catalogues and order your bulbs early. Select medium-sized, solid bulbs.

Bulb-growing contests.—Competition adds interest to one's work or play. Organize bulb-growing contests. Prizes may or may not be offered. Whether the bulbs are grown at school or at home, have the bulbs displayed at school as fast as they blossom. There they may be judged separately.

The exhibition may continue for several weeks. Decorate the cans and pots with crepe paper. Place white sand on the soil.

BULB SCORE CARD.

	Per cent
Brilliancy of color.....	15
Size of blossom.....	20
Sturdiness of plant.....	20
Length of stem.....	10
Diary of growth and care.....	35
Total	100

Ideas must work.—Think of the cry of a squirrel, the caw of a crow, the exhaust of an auto engine; now try to express the idea. You may have heard these sounds time and time again, yet you can not at first imitate them. There is little educational value in the indefinite ideas until they have been expressed or worked. More and more we feel the educational value of doing things with the senses and the hands. It may be the making of a kite or whatnot desired in manual training, the growing of a bulb in agriculture, the patching of a gown in sewing, the baking of a loaf of bread for the home in cooking. It matters not the form of work or play, so long as it is definite expression of a thought.

What Can an Illy Prepared Teacher Teach in Agriculture?

Agriculture and education are today alike definitely indefinable, yet each one who gives some thought to either topic senses its meaning. Each defines either term from his own point of view yet all definitions have much in common. Agriculture of yesterday as the vocation of the farmer may be definitely defined, but the agriculture of today as applied to education—the agriculture as taught in the schools—is not standardized. Agriculture teaching is in chaos.

Agriculture as a vocation is practiced for its own sake. Agriculture in the schools is a means to an end, namely; to direct the attention of boys and girls towards nature and her activities through **growing plants and animals**. By so doing the children find recreation both as children and as adults; they learn to meet new problems successfully for themselves and their neighbors; they acquire a taste for beautification of school and home; they obtain a fund of experiences which largely formulate their spiritual and biological point of view; they become interested in the farmer and his work.

Can a normal school graduate teach such agriculture although at first glance she may seem illy prepared? Certainly. Is a normal school teacher so illy prepared to teach education through agriculture? Granted she is not ready to step between plow handles and teach the boys and girls to plow nor is she prepared to demonstrate to boys and girls how to cultivate and dig potatoes, yet because of her opportunities in training she is prepared to set before her pupils and the patrons of her school the best things which are in print, the best things with which she is conversant. Normal schools are favored institutions. They are well equipped in types—sanitation, recreation, literature, art, agriculture, and the like, and their faculties are skilled in interpreting these types for their students. The students are prepared to project these best types as they work in their several communities.

Is a certified teacher too illy prepared to teach agricultural education? No. First of all, each should orient himself correctly, and, second, each should attempt but a few projects.

Suggestions for Correct Orientation.

1. Agriculture in education is a means to educate children through agriculture; to teach boys and girls how to meet new situations successfully for themselves and their neighbors. This is a definition of agricultural education and is a starting point.

2. Survey the environment in which you are working or expect to work. What are the people doing? What plants and animals are being grown? Are they being grown successfully? What is the condition of the homes? Do they need beautification? Are they sanitary? Are you satisfied with the appearance of the schoolhouse and yard, etc.?

3. Adjust yourself to the needs of the people and to their understanding. Do not announce that you are going to teach agriculture to your boys and girls, many of whom come from farm homes. The patrons of your school sit in judgment on your successes and failures. Get results through doing things. Convince these judges after a term's work that "agriculture" which you have disguised is absolutely necessary in the curriculum of the school.

Properly oriented one or more of the following projects may be attempted:

1. Beautification of school and home grounds.
2. Home and school gardens.
3. Hygiene and sanitation of the home and farm.
4. An agricultural club.

In successive numbers of the Junior Agriculturist Supplement the above unifying centers will be discussed concretely in an attempt to aid teachers to teach agriculture successfully in elementary schools.



JUNIOR AGRICULTURIST SUPPLEMENT

A Teacher's Supplement Issued to Further
Agricultural Teaching in Elementary Schools

Vol. I.

January, 1917.

No. 2

SCHOOL GARDENS.

Every idea seeks expression. And just so far as the idea is given expression, just so far as the idea is set to work has it an educational value.

To acquaint children with nature and her activities, to give boys and girls ideas regarding plants and animals without growing or working with them is a waste of time largely.

As an average thing February is the ideal plant growing month. The soil is awakening and teeming with life, for the soil now a reservoir for water, air and food is becoming warm. Do not let this month slip by without starting a few plants with the children.

The school garden has many reasons for being:

1. The children grow plants correctly and successfully under the guidance of the teacher. They learn how to prepare a seed bed properly; how to plant seeds; how to thin plants; how to irrigate, etc. (Note: For information, see seed catalogues—The Principles of Agriculture Through the School and the Home Garden, and other texts.)

2. All the boys and girls are interested since they work together in companionship.

3. Social values are determined. It is a good thing for children to learn early that there are tools, land, water, seeds to share in common; that community property belongs to all and not to one alone; that the rights of others, the right of the neighbor must be considered. Boys and girls learn that the world does not begin and end with them.

4. If the school garden is worth attempting it is worthy to take a dignified place on the program. And by the way, all children should take part. Gardening is very beneficial to all and can hurt no one.

Grammar and geography are beneficial, a wise educational system has decided. If you believe in the school garden and you have the support of your patrons, why demand these subjects of all children and put the growing of plants and animals on the basis of choice?

A period in the garden breaks the monotony of desks, books, chalk. Recently we sat quietly in a child's desk for thirty minutes. We do not wonder that boys and girls grow restless.

5. The growing child particularly needs exercise, outside air, play. He gets all of these and more in the garden. Gardening is play with a definite educational trend.

6. The school garden is a miniature world, all of nature's forces are at work. Insects, birds, earthworms, moles, gophers are busy working out their life history. Heat, light, and other forces are taking expression. The school garden is continually offering experiences to vitalize the other subjects in the curriculum. Arithmetic, geography, art, and the like may be given new direction. Figure No. I diagrammatically pictures this thought of correlation.

7. An interest in plants and animals developed or fostered at school is invariably carried into the homes. Our experience in ten years with school gardens shows that from 65 to 75 per cent of the children who have gardens at school duplicate them at home.

The above are values that are particular to the school garden and are not proposed as arguments for the teaching of agriculture in elementary schools.

HOW TO START A SCHOOL GARDEN.

Write to the Extension Division, Chico State Normal School, Chico, for enrollment blanks. As soon as these are filled out and returned, vegetable and flower seeds will be mailed to you free. However, if you wish to purchase your own seeds we urge you to do this at once; at least, enroll with us in order that the boys and girls will receive the "Junior Agriculturist" regularly, free.

Selection of plat. A plat 40 by 100 feet for 30 to 40 children does very well. If your school is in a city get permission to garden a vacant lot.

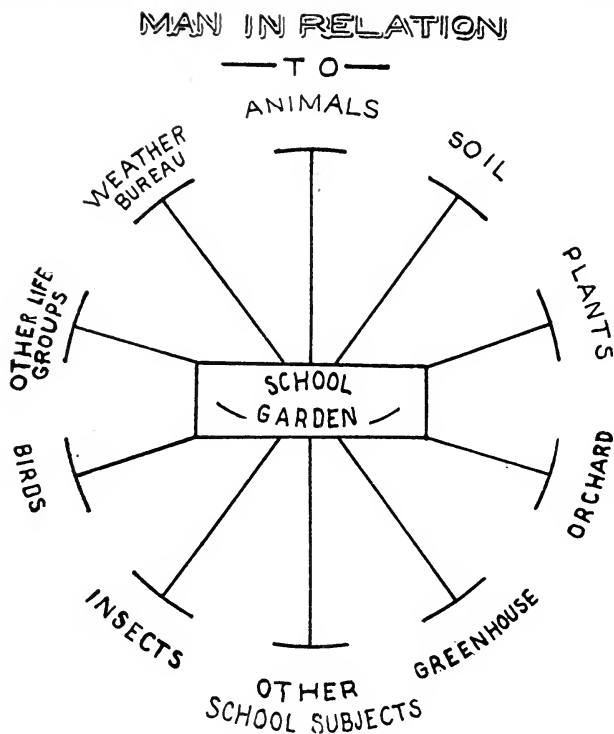


Figure 1.

The plan. With the children develop a working plan on the board. The following points must be considered.

1. Number of children and size of individual plats.
2. Ease of access to each garden.
3. Paths 1 to 2 feet wide.
4. Three types of gardens—individual, community, and experimental.
5. Arrangement of vegetables and flowers for beauty and practicability.

Certain colors clash. Corn and carrots side by side is not a practical arrangement. Corn, tomatoes, potatoes and the like should be grown in mass by themselves.

6. Attractiveness of the garden as a whole.

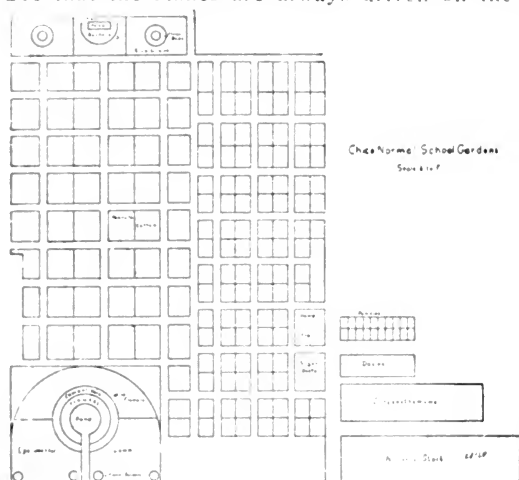
Figure II is suggestive. Individual plats 3 by 4 feet for primary children and 3 by 6 feet or larger for older boys and girls in groups of four make an advisable arrangement.

In the experimental plats, try out the different methods of irrigating, sprinkling, flooding, trenching. Determine the value of fertilization. Grow new types of plants, peanuts, sugar beets, cotton, and so on. Attempt to solve some plant growing problem.

As a project in drawing or arithmetic have the children map the plan to scale. Prepare a plan yourself and tack it on the school wall.

HOW TO LAY OUT A SCHOOL GARDEN.

Bring tools to school. Prepare stakes, 14 inches long, $1\frac{1}{4}$ by $1\frac{1}{4}$ inches, sharpened at one end, three to each pupil. The stakes should be painted white. With a tape measure, yardstick, stones or mallets, two or three balls of string, and a plan, you are ready to lay out the gardens. Half a dozen boys with work planned for each can lay out a plat a half acre in size in one hour by using the following method: Two boys should measure and mark off the four corners. One boy should follow, carrying stakes, another accompanying him to drive the same. One boy should carry string. Stretch the string around the four corner stakes. Let boys with yardsticks measure off distances according to the plan and mark the places for stakes on two sides. See that the stakes are always driven on the same side of the string. Let



boys with mallets and stakes follow, driving stakes carefully in their proper places. With the stakes driven on opposite sides, others should stretch string across, connecting the corresponding stakes. The string need not be broken at each stake. It may be merely wound and carried on to the next stake. With stakes driven at their respective distances at the two remaining sides, treat as above with the string. The garden now has the appearance of a great cobweb with the string crossing in such a way as to outline each garden. The whole class may now be used to drive stakes at each intersection of the string. Use great care to

drive the stakes perpendicularly and on the correct side of the string. With the stakes in place, unwind the string. Do not let the string remain. It stretches and is easily broken.

How to prepare the individual seed beds. Assign the plats to the several children. If the plat as a whole was not plowed and harrowed each child must spade and otherwise prepare his plat. The primary children may need considerable help from the teacher and the older children. See that the spading is thoroughly done.

The first few inches of loosened soil should be thoroughly worked until all clods have crumbled. Use rakes and hoes as needed.

It is taken for granted that the soil is moist and ready to be cultivated. If rains have not so prepared the soil it must be irrigated. Corrugate the plat with trenches six inches deep and close together. Fill the trenches with water. Within forty-eight hours, very likely, the soil will work freely.

Shape the plats so that edges are continuous. See that the plats are slightly higher than the paths. They should slope from the center towards the paths.

Planting. Plant the seeds as soon as possible after the bed is prepared—before the top soil has lost its moisture. See that rows are straight and parallel. Use strings, straightedges, etc. Insist on careful plantings, since success or failure is determined at this step. Do not let the children plant too many seeds. See that the soil is carefully pressed over the seeds.

Culture of the seedlings. Soon after the plants appear thin them out, leaving the strong plants. The distance apart for the plants in the rows is determined by the diameter of the root or the diameter of the head of the mature plant.

Irrigate as needed with the trench system.

Cultivate often. Use the rake more and the watering pot less.

Harvesting. At the very outset discuss with the children uses for the garden products. See "Junior Agriculturist."

MISCELLANEOUS SUGGESTIONS.

Tools. Select a place for storing tools. Either ask the children to bring tools from home or purchase them. Call upon the board of trustees, your parental club, or purchase the tools with money raised through school entertainments and the like. Buy man-size tools with the exception of the spade. Use the so-called "woman's spade." You will need a hoe, a rake, a spade in each set, one set to three pupils.

If sprinkling pots are acquired, take off the sprinkling attachment. Use the trench method in irrigating. Do not sprinkle except to prevent the soil drying out before the seeds have germinated. If it is necessary to sprinkle at this time, see that the soil is moistened to a depth of several inches.

Seeds to plant. In the primary grades grow hardy, rapid germinating seeds that will mature in a few weeks, such as bulbs, lettuce, radish, and the like.

For the grammar grades, select plants of larger economic value, corn, potatoes, cotton, sugar beets, etc. The plants grown in the community should determine largely the trend of the school garden.

Vacation time. The children living near the garden should care for the plants during vacation time for a percentage of the output. In the country some one, child or adult, can be found who will give a little time now and then to further the work. If possible plan to mature crops which need care, before the close of the school.

THE WIDE SCOPE OF THE SCHOOL GARDEN AND ITS USE.

The school garden is a miniature world patterned after the universe. In the garden practically all of nature's forces are at work. Here the children may obtain fundamental background experiences with plants and animals which are necessary to afford a foundation upon which to build the superstructure of literature, art, biology. Children must needs get this background, for life is a continual reaction with nature and her forces and the interpretation of the same. The school must not concern itself alone with tools and agencies for interpretation, arithmetic, geography, history and the like, but must carefully build the foundation. These definite, typical, clear-cut experiences obtained in garden work offer exercise to the agencies, arithmetic, drawing, painting, oral and written speech. Through the garden the children may be brought in touch with the work and problem of their community.

The garden should become a unifying center for the study of plants and animals. In the preparation of the seed bed, earthworms are encountered. Study them. As the plants mature insect pests are met. Study them. Now is the ideal time. The children have a vital interest in the cabbage butterfly since it is a question of its destruction or the loss of their cabbages. Every garden hour brings a surprise.

It is a short step from the garden pest to the big problem of the community, of the state, in controlling insect pests.

Let the garden offer real problems to be solved through the aid of figures. Arithmetic takes on a new meaning. Astounded, the child realizes that arithmetic is a tool to ease one's way rather than "another subject" taught at school.

Experiences with birds and insects met in the gardens should offer subject matter for art, for drawing.

School garden experiences should help to interpret geography, history, civil government. Establish a "garden city" where boys and girls may receive actual training in civic life. See chapter 17, "Principles of Agriculture Through the School and the Home Garden."

To make gardening most potential, clear, definite instruction with practice should be undertaken. Fundamental principles underlying success in growing plants should be demonstrated to the children. The children should know the "why" of each garden practice. Why cultivate soil? Why use the trench method in irrigation? and the like. This question will be discussed more fully in a later issue of the Supplement.

JUNIOR AGRICULTURIST SUPPLEMENT

**A Teacher's Supplement Issued to Further
Agricultural Teaching in Elementary Schools**

Vol. 1

February-March, 1918.

No. 4

MORE ACTIVE PRODUCERS WANTED.

Given, an active interest, it is no task at all for a grammar school boy or girl to spade and to plant a plot 10 by 20 feet. There are 200,000 or more such boys and girls in this state. Bring mathematics to bear and one may be astounded at the possibility; 200,000 times 200 square feet equals 40,000,000 square feet, or more than 900 acres. An acre may produce 20 tons of carrots, beets, or turnips, 200 bushels of potatoes, one and one-half tons of sorghum. One acre correctly handled will produce a large amount of foodstuff.

It is not too large a problem for the state to organize this potential force, to make producers of the boys and girls. In so doing, they will receive real education through doing, through creation, for the garden is a miniature world patterned after the universe. In the garden, practically all of nature's forces are at work. Here the children may obtain fundamental background experiences with plants and animals which are necessary to afford a foundation upon which to build the superstructure of literature, art, biology. Children must needs get this background, for life is a continual reaction with nature and her forces and the interpretation of the same. The school must not concern itself alone with tools and agencies for interpretation, arithmetic, geography, history and the like, but must carefully build the foundation. These definite, typical, clear-cut experiences obtained in garden work offer exercise to the agencies, arithmetic, drawing, painting, oral and written speech. Through the garden, the children may be brought in touch with the work and problem of their community.

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It is a short step from the garden pest to the problem of the community, of the state, in controlling insect pests.

The big problem is one of organization, of helpful supervision. The University of California and the State Board of Education are the first links in the educational chain. Then follow the high and the normal schools, and the elementary schools. The state should reach down through these institutions to the people.

There should be field men to assist superintendents and teachers directly in different localities. Their work should consist largely in teacher training and in active helpful direction of this phase of industrial and vocational work.

HELPFUL DIRECTION IS NECESSARY.

If you are urged to further the home garden—if you have become somewhat enthusiastic over its possibilities, we suggest that first of all you decide this one question, "Am I willing to work overtime in order that planted areas may be visited—am I willing to visit the home plots of the children?" If you can not

answer this question in the affirmative, take our advice and let the home garden alone and start a school area, which can be easily supervised. We urged the home visit in the last issue of the "Supplement" and speak of it again as we believe it is the only way to get active participation on the part of the boys and girls. *Teachers visit the home gardens.*

SCHOOL AGRICULTURE.

Agriculture, as a vocation, is practiced for its own sake. Agriculture in the schools is a means to an end, namely: to direct the attention of boys and girls toward nature and her activities through growing plants and animals. By so doing the children find recreation, both as children and as adults; they learn to meet new problems successfully for themselves and their neighbors; they acquire a taste for beautification of school and home; they obtain a fund of experiences, which largely formulate their spiritual and biological point of view; they become interested in the farmer and his work; they become producers.

Can a normal school graduate teach such agriculture, although at first glance she may seem illy prepared? Certainly. Is a normal school teacher so illy prepared to teach education through agriculture? Granted she is not ready to step between plow handles and teach the boys and girls to plow nor is she prepared to demonstrate to boys and girls how to cultivate and dig potatoes, yet because of her opportunities in training, she is prepared to set before her pupils and the patrons of her school the best things which are in print, the best things with which she is conversant. Normal schools are favored institutions. They are well equipped in types—sanitation, recreation, literature, art, agriculture, and the like, and their faculties are skilled in interpreting these types for their students. The students are prepared to project these best types as they work in their several communities.

Is a certified teacher too illy prepared to teach agricultural education? No. First of all, each should orient himself, and second, each should attempt but a few projects.

SUGGESTIONS FOR CORRECT ORIENTATION.

1. Agriculture in education is a means to educate children through agriculture; to teach boys and girls how to meet new situations successfully for themselves and their neighbors.

2. Survey the environment in which you are working or expect to work. What are the people doing? What plants and animals are being grown? Are they being grown successfully? What is the condition of the homes? Do they need beautification? Are they sanitary? Are you satisfied with the appearance of the schoolhouse and yard, etc.

3. Adjust yourself to the needs of the people and to their understanding. Do not announce that you are going to teach agriculture to your boys and girls, many of whom come from farm homes. Get results through doing things. Convince these judges after a term's work that "agriculture" which you have disguised is absolutely necessary in the curriculum of the school.

Properly oriented one or more of the following projects may be attempted:

1. Beautification of home and school grounds.
2. Home and school gardens.
3. Hygiene and sanitation of the home and school and farm.
4. An agricultural club.

MANY NEW CLUBS FORMED.

Teachers are showing an active interest in the California Junior Gardening Club. Here are the new members:

Name of club	Secretary-treasurer or teacher	No. pupils enrolled	Name of club	Secretary-treasurer or teacher	No. pupils enrolled
Delano	Ruth Dunlap	29	Lindsay	Maude Pierce	14
Ydalphom	Olive E. Fish	8	Camanche	Eleanor Stille	30
Wheatland	Elizabeth Carlin	6	W. P. Frick School	Margaret Poore	24
Chico	Margaret Collins	6	Alameda	C. E. Lawson	70
Chico	Ella Camper	—	Oakdale	Mrs. Jennie Dillwort	5
Bakersfield	Mrs. F. W. Hort	33	Oakdale	S. P. Robbins	45
Chico	C. Earle Morton	7	Rocklin	P. G. Jacobs	50
Lakeside	Mary R. Miller	17	San Lucas	Katherine Richmond	16
Oakland	Miss E. A. Swain	37	Presno	Mrs. W. L. Bachrodt	54
Clawson School	—	—	Potter Valley	Mary Beck	20
McKinley School	Maude T. Pesante	21	Port Costa	I. A. Melver	38
Dixon	Mrs. E. P. Hay	13	Homestead	Hester Nash	16
Orland	Mrs. Artie Hollis	20	Oakland	A. Duhem	40
San Luis Obispo	Margaret D. Talbot	41	Los Molinos	Charles Hertzog	28
Red Bluff	D. C. Elder	168	Valley Center	Mrs. K. Werner	12
Foss Valley	Mrs. Agnes S. Love	14	Bishop	Luccal Root	15
Calistoga	Jo. Carney	28	Elizabeth	Helen Holt	16
Oakland School	C. E. Hudspeth	209	Foster	Mary Miller	10
Selma School	H. F. Smith	58	Longfellow	Louise Caldwell	40
Thornton	Clarence Vance	40	Aptos	Cecil Davis	10
Beverly Hills, Los Angeles	W. H. Weaver	25	Ortigaleta	Nina Cleveland	7
Sites	Eleanor Prime	10	West Covina	Ruth Farrell	20
Lincoln School, San Leandro	Guy Smith	150	San Gabriel	M. S. Serviss	20
San Luis Obispo	Margaret D. Talbot	44	Gridley	Edith Harris	20
Edison School, Berkeley	Lillian G. Chace	10	Calistoga	Mildred Wilkinson	8
Florin	Louise Williams	18	Inyokern	Elizabeth Morrison	10
Shafter, Kern Co.	Laura Carpenter	13	Bishop	Mrs. E. E. Dorrance	15
North Sacramento	Gertrude Donnoan	28	Famosa	Hester Nash	38
Sites, Colusa Co.	Eleanor Seaton	10	Port Costa	M. Iver	38
East Bakersfield	Frances M. Watson	21	San Jose	Stella Briggs	27
Modesto	Mrs. E. R. Utter	40	Orland	Hazel Morrissey	36
Granite Station	Mice M. Bohna	8	Ramona	Mrs. K. C. Orr	37
San Leandro	Dorothea Force	41	Oleander	Claude Grimes	20
Rosamond	Miss E. Van Aken	13	San Francisco	Louise McDermott	20
Shafter, Kern Co.	Laura Carpenter	—	Beaumont	Agnes Roberts	20
Darr's	J. E. Wall	194	608 Lake street, Bakersfield	Neva Lawson	14
Franklin	Peter J. Kramer	34	Coloma School	Cecelia Popini	10
San Leandro	Hazel Peppin	53	El Dorado	J. Grace Mitchell	15
			Pond		

THE ORLAND CLUB.

Through the invitation of Superintendent Cheney of Glenn County and Principal Drew of Orland, we visited Orland. After driving against a cold north wind for an hour, we arrived, chilled through. While thawing out in the sunshine behind a building, we watched the movements of the children at play and at work. The main building is an attractive bungalow, long since outgrown. The overflow of children is housed in what used to be the one-teacher high school. Careful supervision was felt, not seen. The children played joyously in the well-equipped yard. After recess, classes interchanged buildings. They reminded one of a flock of geese crossing the sky as the children, single-file, made their way across the yard. There was no confusion; all was business, although there was no evidence of supervision. No teachers were in range.

We talked to over 400 children, small and large. Attention was good. Active interest was splendid. Every child desired to grow plants or animals. The enthusiasm, if directed and sustained, will go far towards food production.

At the teachers' meeting all agreed that home supervision, home guidance were necessary. It was suggested that the town be divided into sections with garden supervisors over each section. The inspectors, to inspect and to score the several gardens in their districts and later to report to the teachers concerned. The teachers are then to inspect and to score the best gardens. It was thought advisable for one section to grow potatoes, another milo, another common garden vegetables, and for the children of different sections to pool their interests. Other ways and

means were discussed. (See Supplement of last issue.) We look for big returns at Orland. Orland's problems are yours. How can interest be sustained? It is up to the teachers.

Such an experience is evidence of the fact that properly directed and properly supervised the grammar school boys and girls might become a tremendous force in food production. Children respond actively, for one is appealing to the creative instinct which is dormant or active in us all. Thousands of boys and girls could easily be thrown into the food drive.

PRODUCTION AND INSTRUCTION.

Production and instruction should go hand in hand. It is difficult to measure educational values to be obtained through maturing a plant or an animal. It is easy to measure, to weigh, the material products of a garden. Therefore worry not about educational values, but see that the *areas produce*. Educational values will be absorbed in the process of production. Instruction lends 100 per cent production.

Instruct the children in the big principles underlying plant and animal growth. One may teach the fundamental principles of plant growth through producing a bulb, a carrot, corn, potatoes or what not. It matters not so much the type of plant as the method and the teacher. One may learn as much agriculture through producing a bulb as an alfalfa plant if the psychology of the transaction is right.

Give definite instruction in principles. Put a *good* text into the hands of the children, then use it right. See "Supplement" of December-January.

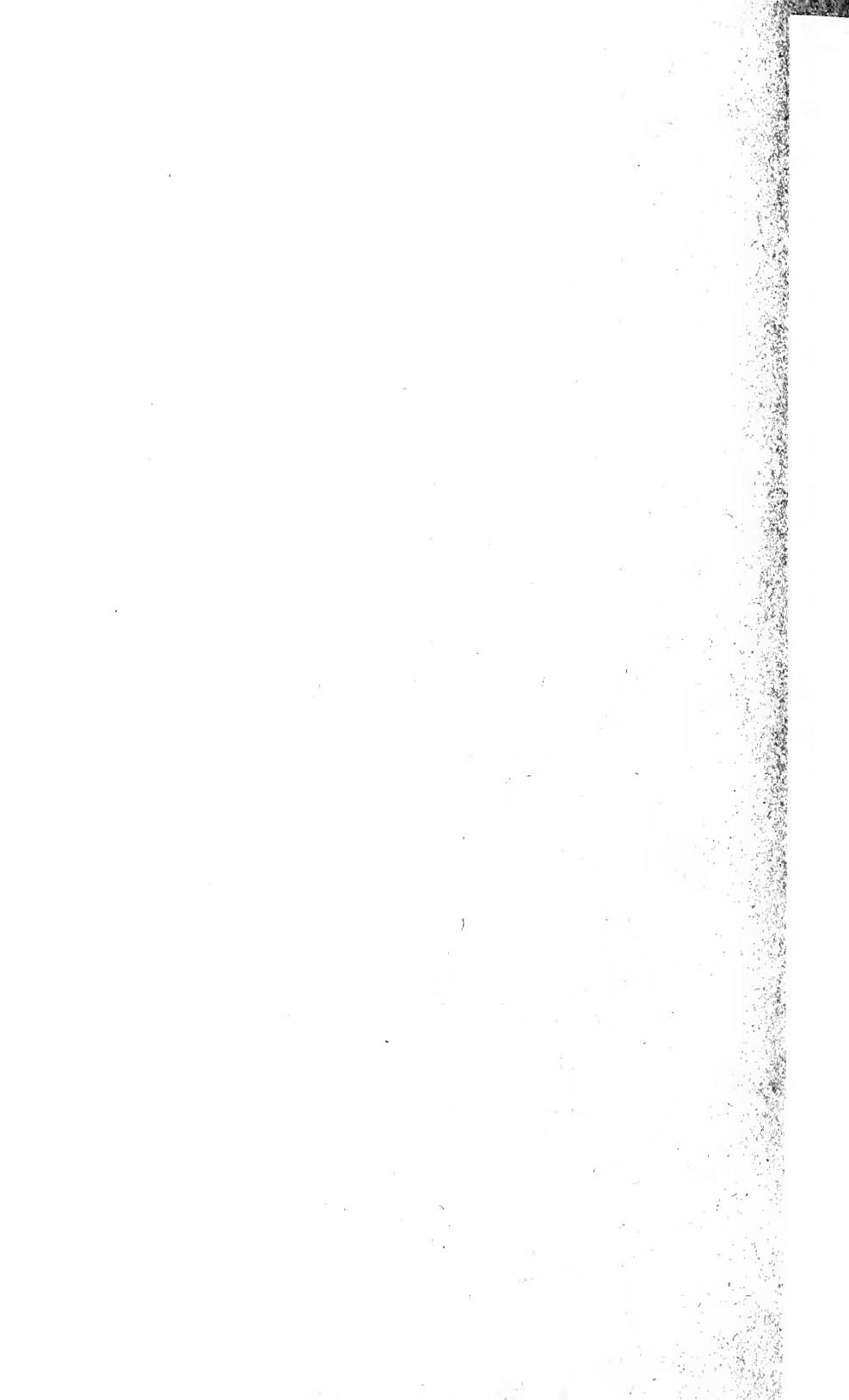
Study Outline.

Plant—Bulb, potato, corn or what not.

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| <p>a. Identification.</p> <ol style="list-style-type: none"> 1. Different varieties. <p>b. Uses.</p> <p>c. Needs.</p> <ol style="list-style-type: none"> 1. Air. 2. Food. 3. Moisture. 4. Light. 5. Warmth. <p>d. Cultivation.</p> <ol style="list-style-type: none"> 1. Plowing, spading. 2. Harrowing, disking. 3. Weeding. 4. How performed. <ol style="list-style-type: none"> (a) Tractor. (b) Horse. (c) Hand. <p>e. Food.</p> <ol style="list-style-type: none"> 1. Fertilization. 2. Physical and chemical condition of soil. 3. Cover crops. <ol style="list-style-type: none"> a. Inoculation. 4. Rotation of crops. | <p>f. Moisture.</p> <ol style="list-style-type: none"> 1. Capillary water. <ol style="list-style-type: none"> a. How conserved. b. Its function. 2. Gravitational water. <ol style="list-style-type: none"> a. How conserved. b. Its function. 3. Irrigation. <ol style="list-style-type: none"> a. Sprinkling. b. Flooding. c. Trenching. 4. Relation to humus, clay, lime, etc. <p>g. Light.</p> <ol style="list-style-type: none"> 1. Open areas. 2. Direction of planted rows. 3. Crowding. 4. Thinning. <p>h. Warmth.</p> <ol style="list-style-type: none"> 1. Relation of humus, clay, sand, lime, cultivation, irrigation, etc. 2. Time to plant certain seeds. |
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General Method of Teaching: Step 1. Teach principle under discussion by experimentation. Step 2. Make application to the child's plant project. Step 3. Show how the farmer makes application. Emphasize "doing." Experiment and demonstrate. Avoid mere telling. It is astonishing, the amount of one's second-hand information. How do you know that house flies breed in manure, that "wrigglers" turn into adult mosquitoes, that seeds need air for germination? Few have had first-hand experiences and information. Many have been told. Give boys and girls first-hand information. Give them a fund of original experiences. This fund of real experience gives them power to interpret and to meet new situations.





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