

Domestic Science in the Public Schools
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Bibliography.

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Catalogues of Various Schools.

Outline

Introduction

Manual Training

Discussion

Object of Domestic Science

Educational

Psychological

Social

Equipment

Plans

Cost

Course Suggested

Rural School

Grammar School

High School

Conclusion

Quotation from Mrs Kedzie Jones.

Domestic Science in the Public School.

Manual training originated in Europe many years ago. It was used first as a means of developing industrial skill. The men who secured this training were thus enabled to enter the factories, and advance the manufacturing interests. Its importance in aiding the child to secure a better general education, better selfcontrol and better intellectual development was at first entirely overlooked.

Manual training was introduced into this country by certain broadminded men, who, as practical educators, foresaw the advantage of such training. Under these men and their successors the European system has been modified and adapted to meet the needs of the American school, and educators feel that it is fulfilling a want and has

become a permanent part of our public school system.

For many years the tendency has been growing among the American people to avoid the vocations that require manual labor, until most of these occupations have fallen into the hands of foreign workers or those of foreign parentage. It is believed that manual training in the public schools will do away with the feeling that manual labor is degrading because it proves that skilled labor requires intellect and to just the extent that brain is united with muscle does labor become honorable.

This training has been in use long enough to verify the following statements. It is an improvement to the course of study because the children do better text book work when the manual training is taught than they do when it is not. This is the opinion

of twenty-seven of thirty-six city superintendents who were asked concerning the value of manual training in their schools. Some of the manual operations are helpful to the child. They give him correct conceptions of form through the careful and systematic use of his senses. His attempt to make the model gives him a knowledge of materials and utensils.

Then, too, the operations are such that all normal children may do and understand them. And the results are of general, it might almost be said, of universal utility. This is readily seen when it is understood that a manual training course provides work in carpentering, modeling in clay, construction, mechanical drawing, weaving, sewing, and cooking. It might be added that statistics show that this work holds the pupil in school for a longer period because they are more interested in their work.

By extending the work, that is ordinarily done in the kindergarten, through the primary and lower grammar grades it can be made to meet the work of the higher grades, thus giving the child industrial training through his entire course. It has been found advisable to have the work alike for all pupils below the seventh grade; from the seventh grade up through the high school, it seems best to divide the boys and girls and to give work especially adapted to their tastes, abilities, and needs.

This work can be and is being done without the pupil spending more hours per day at school than when textbook work only is done. Experience has shown that all manual training below the sixth or seventh grade, can be done in the regular school room and under the regular teacher. The carpentry

and cookery require a separate room with equipment and special preparation on the part of the teacher.

Manual training carried through a course of study and carefully correlated, means more than the training of the hand. It means a fuller development of every faculty.

It is the purpose of this paper to discuss somewhat fully the subject of cookery in the public schools, the purpose, the desirability, the cost, and some suggestions as to the amount and kind of work to be given.

What has been said in regard to manual training in general applies with increased force to the cookery.

There is a growing interest in the subject of food and nutrition and this interest demands that the work be put within the reach of all. Statistics show

that but two percent of the pupils of our land get a high-school education. The work must be put in below the high-school, then, if every woman is to have this training.

The work in cookery cultivates habits that are all important to the woman. Among these are neatness, care of details, self reliance, and responsibility. The selection and purchase of kitchen supplies trains the judgement and what is more important it teaches women to know food, what food is necessary and most desirable, the cost, and the nutritive value of the same. No course in cooking is complete until it has thoroughly inculcated the habits of cleanliness and orderliness. There is no work in the curriculum so well fitted to teach these habits as is the cooking. The same work will train the girl to be observing, to be deft of fingers, to apply

her knowledge from various sources to the work in hand.

The work in cooking can and should be carefully correlated with the other work taught. The correlation will depend upon the age of the pupil taught and the work attempted. A cooking lesson may furnish practical problems for the arithmetic classes, or it may furnish material for a free-hand drawing lesson, or the subject matter may be made the basis of one or more English lessons.

If the work is being taught in a high school, the chemistry, higher botany, physics, and advanced physiology may be used with the cooking. The possibilities of this work are great and each teacher must work them out for her own school. Plates A and B are put in as ^asuggestions as are pages forty to forty four.

But in regard to the food stuffs, the pupils should know of their production, selection, preparation, composition, and dietetic and hygienic value. The thoroughness of this work, will be determined by the age of the pupil and the amount of preparatory work she will have had.

Turning from the educational phase, let us consider the psychological value. The work exercises and therefore develops the faculties of the mind, especially attention, judgment, and will. It calls for exactness and therefore inculcates habits of carefulness, thoughtfulness, industry, thoroughness, and self reliance. The senses of touch, taste, and smell will be developed, as the pupils work with the different foodstuffs. The muscular sensibility becomes reliable when it is repeatedly used. The work adds to the number of sensations which the mind receives

and from these simple factors, or elements of life, the conscious self builds life on a higher plane.

Unconsciously the aesthetic nature of the child is developed. Children love the beautiful and soon learn to ^{appreciate} harmony, as well as, the fitness of things.

Great as are the educational and the psychological effects of this training it is doubtful if they are equal to the sociological effect. The work tends to fit girls to live useful lives, by making them capable of doing something for themselves or others. In fact it should make them self-reliant, self-respecting, and able if necessary to be self-supporting.

Fifty years ago it was believed that every child should learn to read and write to become a good citizen, now it is as fully believed by those who are making

a study of the social problems of our land that every girl ought to be taught the science of cooking and cleaning to be a good citizen. She should know good food, how to prepare it, and how to serve it.

Mrs. Richards has said; that, she believes mal-nutrition to be back of the desire for strong drink. If this education can fit the wives and mothers of our land to protect their homes from the drink habit, only, it is worth while.

Municipal authorities are constantly struggling to better sanitary conditions. When they are aided by intelligent women who understand the danger resulting from unsanitary conditions there will be less disease and death.

In the home of the laborer who gets from one dollar to one dollar and seventy-five cents a day there is a problem

to be solved. The time and energy of the man of the house must be spent in keeping up the income and the expenditure of it falls upon the wife. She must properly feed and clothe her family and if possible lay by for the rainy day. If she has had careful training in household economy she can solve the problem successfully and her family will not become diseased morally and physically and, thus, the onward progress of our nation will not be retarded.

The teaching of cookery in the public schools will require a special room with equipment. The cost of this laboratory and equipment will vary according to the material used, character of the work done, and the number of students accommodated.

The room chosen for a school kitchen should be light and well ventilated. A south exposure is most desirable. The floor

will be found most serviceable if it is made of hard wood and oiled once or twice a year. The wood work, too, may be oiled. The walls may be tiled, papered, painted, or calcamined, of these tiling is least and calcamining the most desirable.

The room needs heating apparatus, water and gas fixtures. The hot water boiler attached to the range will furnish hot water at the sink. There should be a double sink for every eight or ten girls unless the desks are arranged as at the Industrial Training School, Indianapolis, Indiana.

The gas supply must be found at every desk if pupils are to do individual work to the best advantage. If gas stoves, which may be bought as low as one dollar and twenty five cents each can not be put in, the ordinary Bunsen burner used under a mat on a tripod may be substituted.

This was done for one year at the Kansas State College and because of the number of students it was found much more satisfactory than the use of range and and gasoline stoves. There should be a range in every laboratory in addition to the small stoves.

Opening from the laboratory there should be two or three closets, these will be used for the regular supplies and for the utensils for general use. Cupboards may be used but they are not so satisfactory and they take up much room.

The arrangement of the desks and the number of students accommodated will depend somewhat upon the size and shape of the laboratory. There are several ways of arranging the desks in the room and each has some advantage over the other. The ^{desk} plan and arrangement shown on Plates I and II is

a very desirable one. It gives the teacher a better opportunity to oversee the work of the pupils than any other form. The form of this may be varied; Oread uses a circle instead of the hollow square, while the Samuel Beady School uses what appears to be a hexagonal form. Two of the laboratories in the Kansas State Agricultural College have the hollow square and the same form is used in the Providence, Rhode Island Normal School and at Pratt Institute, Brooklyn, New York. The objection to this form is that it does not accommodate as many girls to the same amount of floor space as do some other plans. The plan of Plate III requires no more floor space for twenty-five individual desks than does Plate I for twenty-two. The double desk of Plate III may be arranged as indicated in

Plate IV if the room is better adapted to such an arrangement. Desks arranged similarly to those of Plate III are in use at Framingham Normal School and at Drexel Institute, while the floor plan shown in this plate represents one of the laboratories at the Kansas State Agricultural College.

The form of desk shown in Plates V and VI more nearly approaches the individual table. Plate V shows the arrangement of kitchen and dining room at the Industrial Training School, Indianapolis, Indiana. Each desk is made for the use of two girls and is supplied with a small sink attached. Plate VI shows the way in which the water is carried to the pipes below. It will be readily seen that this is not a sanitary system of drainage hence is not ^{to} be commended.

Mrs. Kedzie in fitting up her laboratory at Peoria, Illinois had the tops of the ordinary kitchen cabinets taken off and hard wood tops put on and used them. She likes them because they more nearly approach what the girl will have in her own home than any other form that might be used. It will be readily seen that if a number of students are to be taught, the kitchen table desk would be impracticable. but where room is plenty and students few it approaches the ideal laboratory desk.

What ever desk is used, it ought to provide a working surface not less than twenty-four by twenty-four inches, and it is much better if more space can be given. The desks of Plate I allow a space twenty-four by thirty-four inches for each girl, while those in sections I and II of Plate III are twenty-one

by thirty-six inches and in section III they are thirty by thirty-six inches. The desks should be from twenty-seven to thirty-four inches high depending somewhat on the age ~~of the~~ ~~age~~ of the pupils to be taught.

The cost of fitting up a laboratory varies. When cooking was put into the public schools of New York City, each school was allowed two hundred dollars to fit up the laboratory and one hundred dollars to purchase supplies. Boston public school figures are about the same. Desks like those shown in Plate III may be put in for from one hundred fifty to one hundred eighty-five dollars. These desks are oak, ^{and are} oiled and varnished except the top. Each one has a large utensil drawer, a moulding board, and a desk board.

The finish used on the desk top may be glass, tile, zinc, or oil and varnish,

or the natural wood. Of these the oil and varnished top is the most desirable; the tile soon become unsanitary because of the cement between the tiles, the glass cracks badly and becomes uneven with use, while the zinc is hard to keep in good condition.

The number and kind of utensils to be used in a laboratory will vary according to the amount of money to be expended, the number of pupils to be supplied, and the amount and kind of work to be done. This list of utensils given with this paper has been in use for one year and has been found to be all that is necessary for a class of twenty-five girls. The prices quoted may be duplicated at any good hardware store. The utensils were the best of their kind and, here let it be said, it pays to get no other. The blue ware mentioned is the celebrated Baumer ware and is not only good but beautiful and easily

kept clean. The purchaser should see that all dishes are perfect when purchased. The refrigerator listed is large and lined with porcelain.

The list may be cut to suit the taste of the one who purchases but it is unwise to try to work with too few dishes because time is wasted in waiting or in washing dishes during the practice work.

The cost of material for use in the practice work will vary from lesson to lesson according to the work given. One school limits the cost of material to two cents each for the number of girls cooking. Another allows seventy five cents per lesson to be expended for materials for twenty-five girls. The cost at the Kansas State College is about two and one half cents per hour for each student.

The amount and kind of work to be done will depend upon the age and training of

the pupil and the time which can be devoted to cookery.

The work may be put into the seventh grade; but where there is a high-school course to follow it is better to reserve it for the eighth grade. The work may extend through two years with a lesson period one and one-half hours long. Lessons should be ^{given} as often as once a week and twice a week is still better. One school that tried one lesson every two weeks a pronounced ~~that~~ failure.

In the country school where one teacher must do so much it is impossible for her to do any cooking but with her knowledge of chemistry, physiology, and bacteriology she can supplement her text book work with helpful suggestions. There are those who believe that the time is not far distant when the consolidated school will replace the country school. When that time comes the country

girl may have cooking as well as her city cousin. The work may then be so arranged that one teacher may devote a portion of the time to a class in cooking.

The work will still be limited yet if well handled much may be done. The first principles of cooking may be taught by means of simple dishes.

The experiments suggested in the accompanying outline will prepare the way for the cooking lesson that is to follow. There should be occasional serving lessons; they may be used to review work already done or they may be given in connection with some new work that may be made the basis of the little meal. The class should be divided so that a portion of the class serve the others and are in turn served.

The outline given can only be suggestive; each teacher must adapt it to ~~suit~~ her needs. If she has more time the work may be increased, if less some lessons may be omitted. This subject should be carefully

connected and reviewed from day to day. If the pupils are to do any work before recitation it must be definitely assigned.

For the grammar ^{school}, where the work may be extended through two years, the same outline may be used as the basis for the work of both years. Pupils forget so much that the theoretical work will need to be worked out a second time giving it more fully the second than the first time. New dishes and more of them may constitute the practice work for the second year. A fairly skillful class ought ^{be} able to take the batter mixtures and bread in the second year. If no more cooking than that of the eighth grade or seventh and eighth grades can be taught, the work should include all kinds of plain cookery.

While much can be done in the grammar school, the work can be done better and more thoroughly in the high school after the work

chemistry, bacteriology, and higher physiology.

The same principles will be used in doing more complicated work. The high school cookery should include food preservation and invalid cookery. The serving must be done here and may be done a little more elaborately. Along with the cooking and serving will be studied, the nutritive value of the various foods. The cost and the nutritive value of the meals that are served should be worked out.

The teacher who is to have the cooking should have an accurate and ready knowledge of this and allied subjects. In the grades as well as in the high school the how should be supported by a scientific why. This will make the work easy and right from the first. The teacher, too, must remember that she is educating girls for the highest place in life - the home. Hence she should

not teach fancy dishes with French names but rather have it include a knowledge of the elements of food, their digestibility, their value as heat and tissue producers, and the changes that occur during cooking. She should lead the girls to see the advantage of attractive looking food, of plain living, ^{and} of sanitary kitchen utensils, and food. The teacher should realize and lead her pupils to realize the effect of food upon the development of the moral and social life of a people. Great is the work of the teacher but far greater will be the results.

No more fitting words can be found with which to close this paper than those of Mrs. Kedzie Jones when she says "If, then, manual training in her early years will help to make a woman more useful in her home, more helpful in her community, more able to accomplish every where the work she wishes to do, then certainly there is great need for manual training for girls."

Plate A.

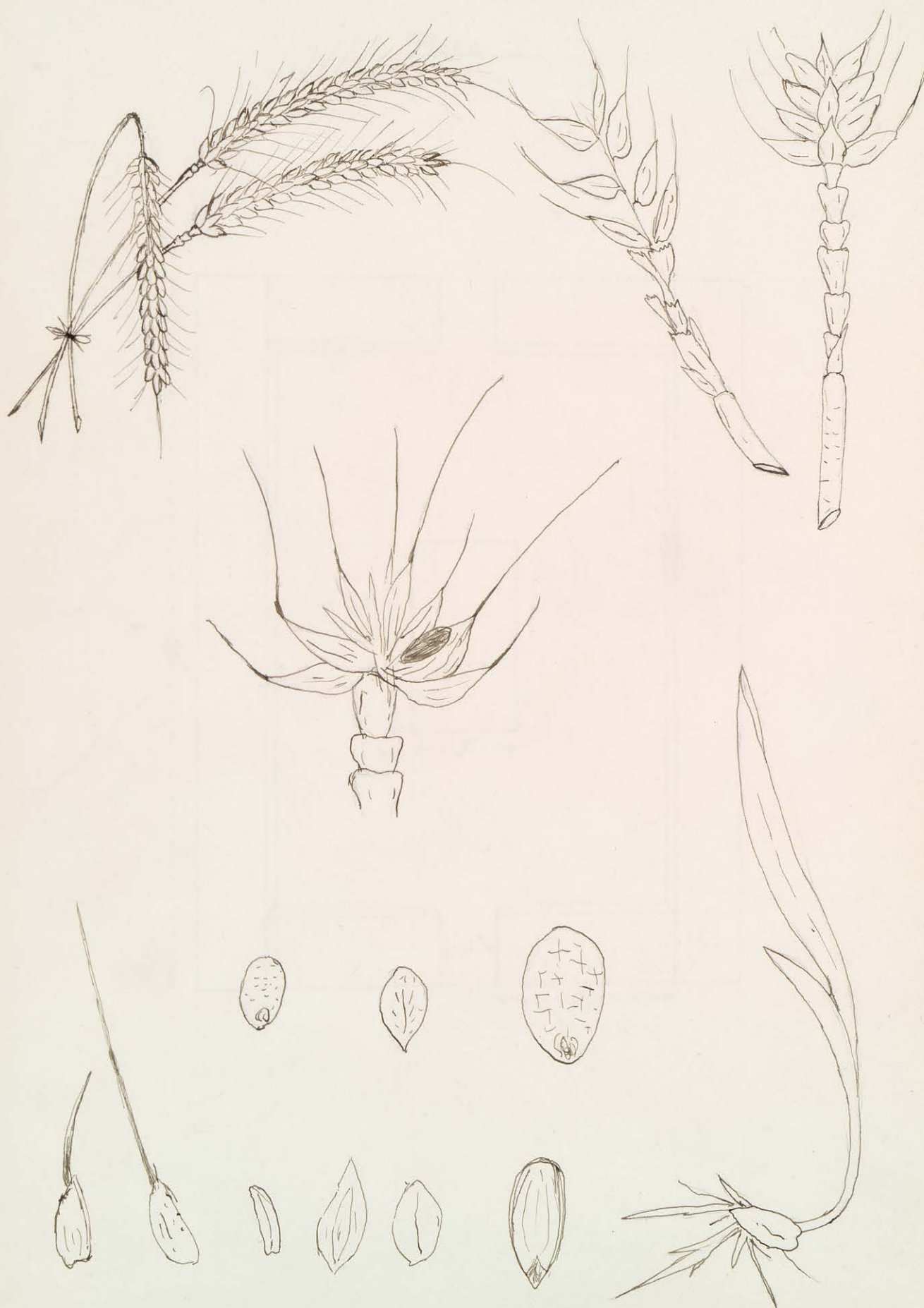


Plate I.

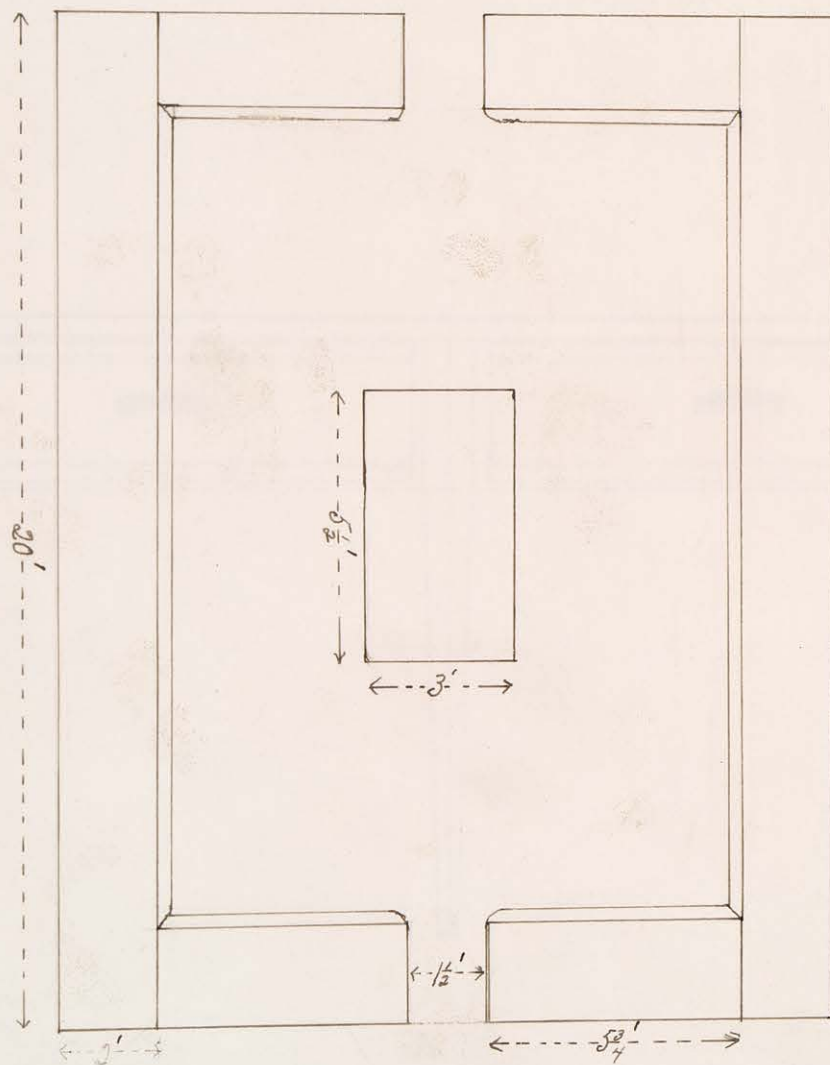


Plate II.



Plate III

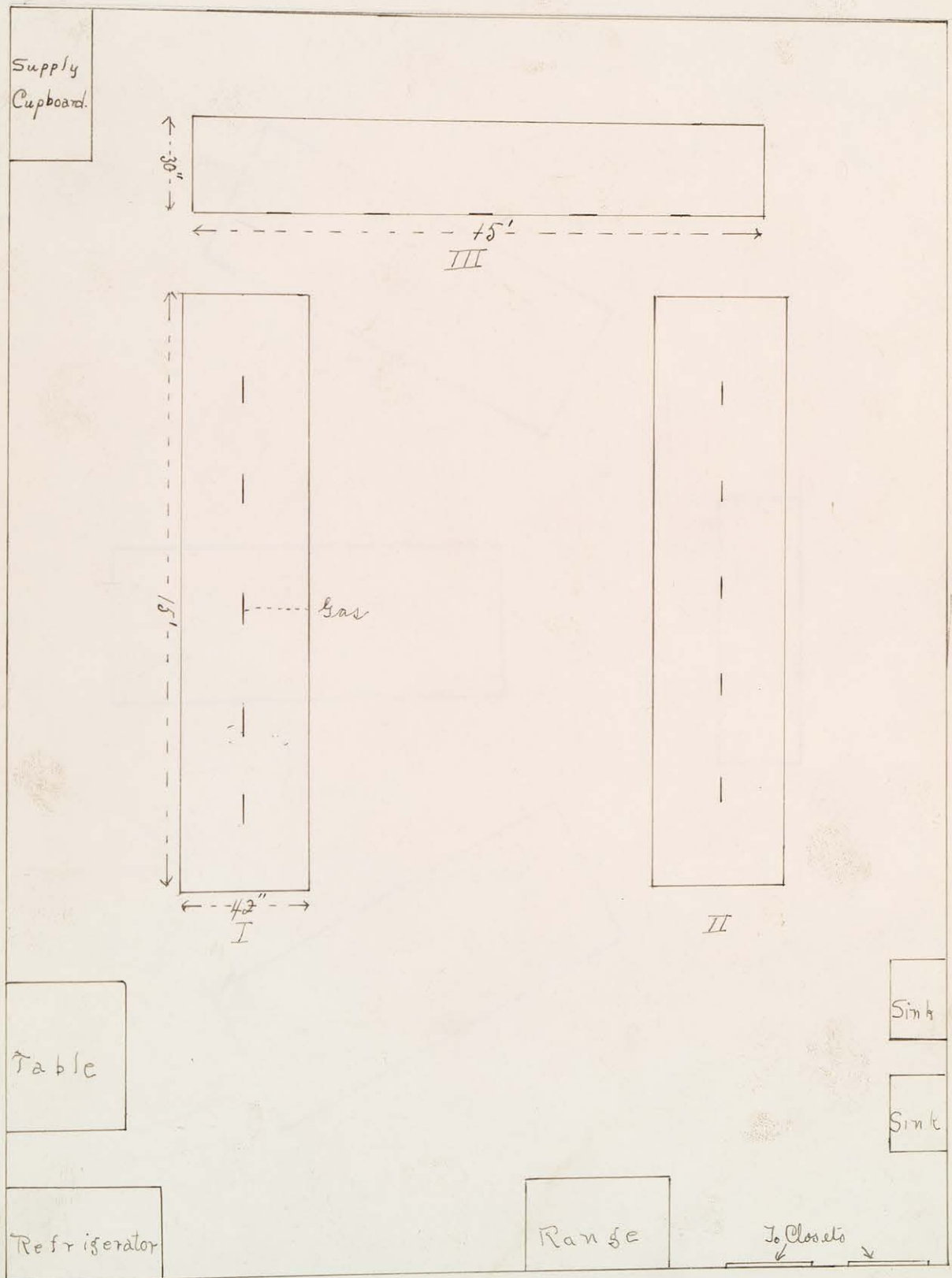


Plate IV.

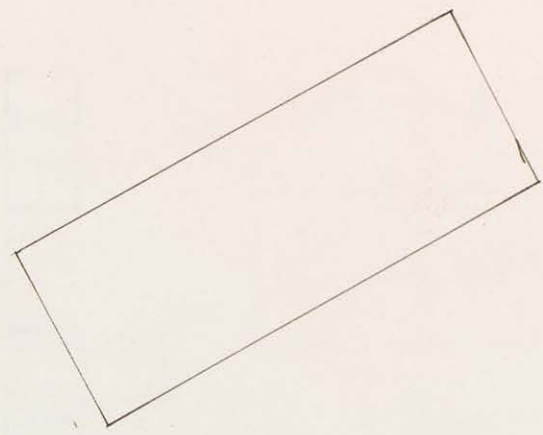
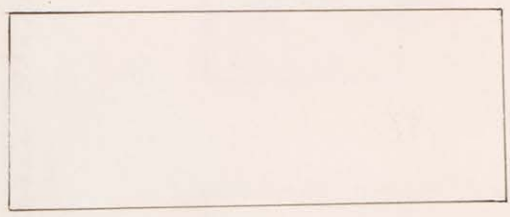
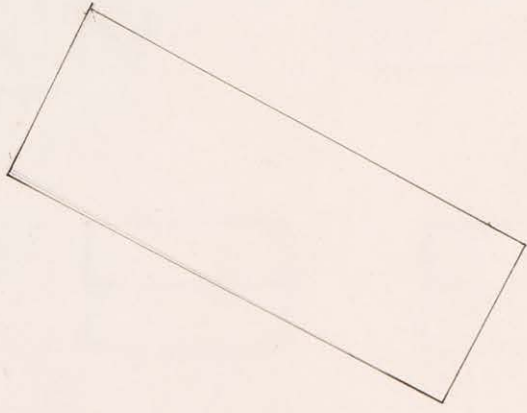


Plate V

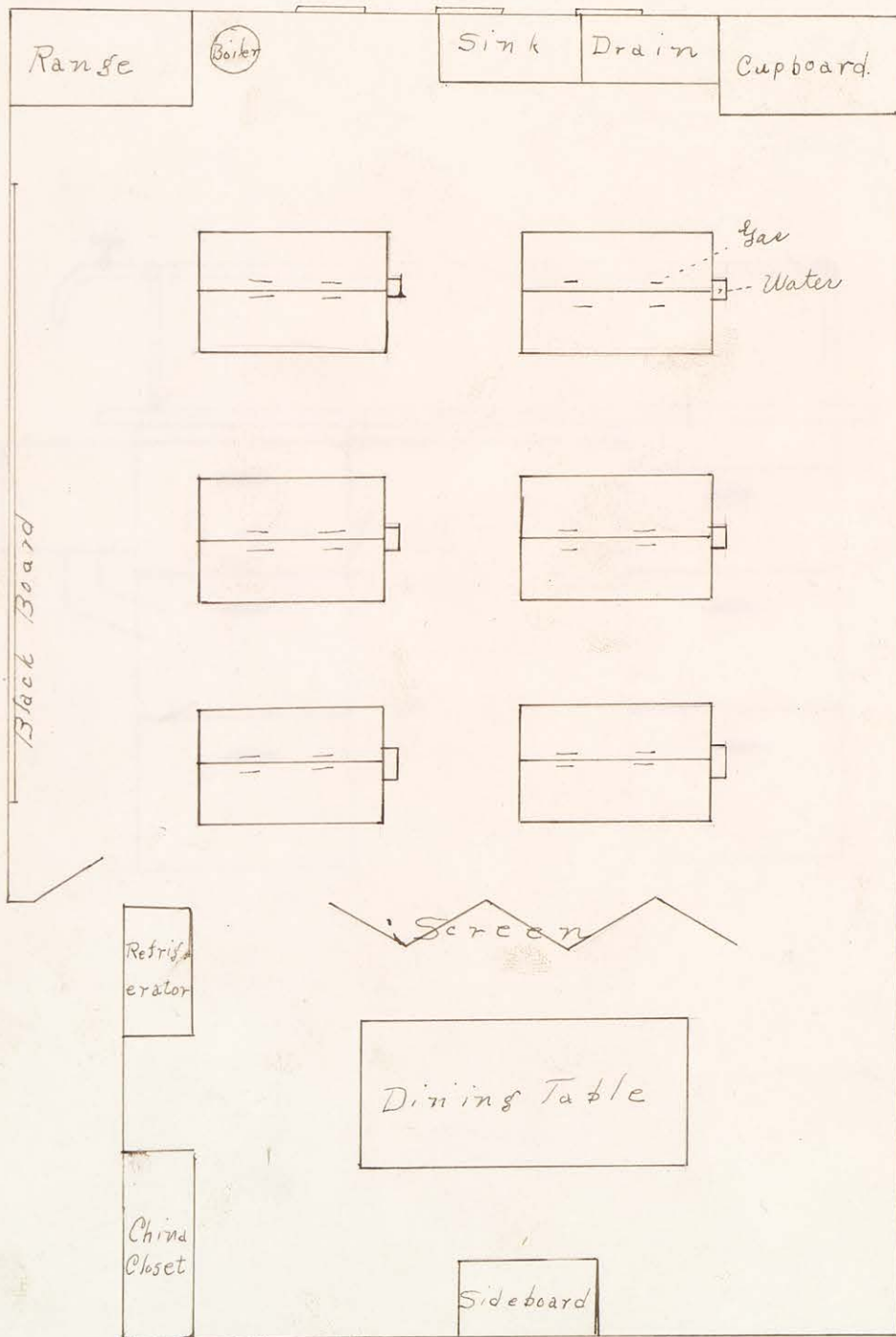


Plate VII



Utensils Used in Laboratory Shown on Plate.

Number	Article		Cost
25	Dredge Boxes	@ .05	1.25
25	Salt Boxes	@ .03	.75
25	Pepper Boxes	.03	.75
2	Harris Presses	.23	.46
4	German Graters	.18	.72
6	Large Nutmeg Graters	.06	.36
6	Large Lemon Reamers	.11	.66
25	Biscuit Cutters	.03	.75
12	Hoy Lemnis Egg Beaters	.04	.48
12	Hoy Dover Egg Beaters	.15	1.80
1	Quaker Dust Pan		.21
1	Timbale Iron		.75
2	Russian Iron Gem Pans	.25	.50
3	Frying Baskets	.20	.60
5	Colanders	.18	.90
1	Colander		.14
25	6" Pie Pans	.23 per doz	.48
17	Caring Knives	1.25 " "	1.77

8	Caring Knives	1.50 per doz.	1.00
1	Bread Knife		.50
1	Ham Knife		.65
1	Clearer		1.10
1	Blue Pitcher		.35
1	Blue Pitcher		.50
1	Blue Pitcher		1.00
4	Mixing Bowls	@ .50	2.00
2	Mixing Bowls	.75	1.50
2	Wash-pans	.22	.44
6	Pudding Pans	.24	1.44
6	Pudding Pans	.20	1.20
25	Rolling Pins	.07	1.75
6	9" Blue Pie Pans	.12	.72
6	9" Blue Pie Pans Deep.	.15	.90
6	10" Blue Pie Pans	.15	.90
2	Blue Strainers	.15	.30
1	Nickle Plated Tea Kettle		1.35
4	Wire Potato Mashers	.08	.32
25	Steel Frying Pans	.06	1.50

2	Steel Frying Pans	.25	.50
2	9" Steel Skillets	.45	.90
4	Genuine Hunter Sifters	.16	.64
2	Aluminum Scoops	.40	.80
2	Iron Scoops	.05	.10
2	Iron Scoops	.12	.24
4	Wire Toasters	.05	.20
2	Hot Oyster Broilers	.45	.90
4	16" Forged Spoons	.12	.48
1	Wire Ladle	.08	.08
2	Aluminum Kettles	1.75	3.50
2	Steamers	.35	.70
12	Loaf Pans	68 $\frac{1}{2}$	1.00
2	Large Pudding Moulds	.60	1.20
25	Brushes	.04	1.00
4	Scrub Brushes	.20	.80
7	Small Blue Stew Pans	.23	1.61
5	Small Blue Stew Pans	.28	1.40
2	Beaded Moulds	.40	.80
25	Blue Cups	.13	3.25

25	Table Spoons	@ .03	.75
25	Spatulas	.22	5.50
25	Knives + 25 Forks	1.35 per set	5.62
50	Teaspoons	.02	1.00
4	12" Forged Basting Spoons	.07	.28
4	Blue Stew Pans	.55	2.20
4	Blue Lids	.20	.80
4	Blue Stew Pans	.45	1.80
4	Blue Lids	.16	.64
25	Pudding Pans	.16	4.00
4	Blue Dish Pans	.68 $\frac{1}{2}$	2.75
5	Blue Can Funnel	.25	1.25
2	Knuckled Can Openers	.45	.90
1	Blue Kettle and Lid		1.15
2	Wooden Bowls	.30	.60
2	Chop Knives	.18	.36
1	Butcher Knife	.40	.40
1	Butcher Knife		.75
1	Pastry Knife		.40
1	Boning Knife		.28

1	Savory Roaster		\$.95
2	Russian Iron Angel Food Pans 30		.60
2	Paste Jiggers	.10	.20
2	Soup Strainers	.17	.34
12	Square Tin Pans	.08 $\frac{1}{3}$	1.00
1	Ice Shave	.40	.40
1	Blue Pail		1.00
1	Dipper		.35
25	Blue Saucers	10	2.50
2	Enterprise Meat Choppers	1.75	3.50
1	Refrigerator Porcelain lined		28.00
5	Buffalo Steamers	.80	4.00
25	Glass Measuring Cups	.05	1.25
6	Tin Measuring Cups	.04 $\frac{1}{4}$	.25
1	Clothes Rack		1.15
4	Puree Strainers	.20	.80
6	Rice Cookers 4 @	68	-3.48
	2 @	88	
1	Range and Boiler		40.00
25	White Bowls	.07	1.75
	Total		176.38

Desk Equipment in Laboratory of Plate

1 Dredge Box	1 Bread Board 18 X 25
1 Salt Box	1 Desk Board 11 X 25
1 Pepper Box	
1 Biscuit Cutter	
1 6" Pie Pan	5 space for each student.
1 Paring Knife	Tables I st & II 21" by 36"
1 Brush	Table III 30" by 36"
1 Brush	Height of Tables 34"
1 Blue Cup	Size of Utensil Drawer
1 Blue Saucer	Width 22"
1 Table Spoon	Length 17"
1 Spatula Knife	Depth 4 ³ / ₄ "
1 Case Knife	
1 Fork	
2 Teaspoons	
1 Small Blue Pan	
1 Glass Measuring Cup	
1 White Bowl	

Study of Potato.

1' History

1² Early

1³ Native of South America

2³ Introduction to North America

2² Later

1³ To Spanish in 16th Century

2³ To Ireland in 1565 by Sir John Hawkins

3³ To England 1685 by Sir Francis Drake

4³ To England 1686 by Sir Walter Raleigh.

2' Botany

1² Botanical name, *Solanum tuberosum*

2² Family - Deadly nightshade

3² Climate Temperate

4² Part used as food - Tuber

5² Propagation - By buds - eyes.

3' Chemical Analysis

1² Constituent parts

1³ Water

2³ Starch

3³ Nitrogenous matter

4³ Mineral Salts

5³ Cellulose

2² Experiment

1³ Starch, water, and cellulose separated

2³ Starch test, - Iodine

3³ Starch microscopically viewed

1⁴ Granules

2⁴ Cell walls

4¹ Food value

1² Dependent upon cooking

1³ Starch

2³ Softening of cellulose of vegetable fiber

2² Dependent upon dietary combination.

1³ Fat

2³ Albumenoids

5¹ Practical value of Instruction

1² Pupils taught

1³ Not to serve waxy potatoes

2³ To allow steam to escape when baked

3³ Not to use potato water

- 4³ To combine with nitrogenous foods
- 5³ To store potatoes in cool dry place
- 6³ To thoroughly cook all starch foods.

English Lesson on the Potato

This vegetable is a native of South America where it still grows wild. The potato belongs to the same family of plants as the tobacco. It contains a poison peculiar to the plants of this class, which may be extracted from the potato by cooking.

The potato contains many compounds. The most important of these is starch! It also contains water, fat, cellulose, albumen, and mineral matter. Starch is composed of Carbon, hydrogen, and oxygen. It is not flesh forming but heat giving.

A potato should be well chewed so that the saliva can act upon the starch and change it to sugar.

To cultivate the potato a good soil and a temperate climate are necessary. Some think the potato is a healthy vegetable: this is only so when eaten with a food rich in

nitrogen for it lacks albumen. Served with meat eggs or fish the potato helps to form a perfect diet.

The people of Ireland use the potato as one of the chief articles of diet. but they drink large quantities of buttermilk or skim milk. which contain a great deal of flesh forming material.

The potato may be cooked in many different ways, it can be baked, boiled, steamed, stewed or fried. Of these the most digestible way is baking. A baked potato must be broken at one end, when taken from the oven to allow the steam to escape. Boiled potatoes are digestible, but the water in which they are boiled must not be used because it contains the acrid juice.

The potato when well cooked is dry and mealy

E. N. - age fourteen years
who was a pupil in the New York City Schools.

Outline for Twenty five Lessons

I General Lessons

1. Cooking Utensils and their care
2. Fuels - Kind, composition, value, etc. etc.
3. Water - Composition, purity, contamination, etc.

II Food - Definition, Classification - Cooking Potatoes

III Carbohydrates

- 5 White Sauce with vegetable.
6. Cream vegetable soup - Vegetables
7. Cream vegetable soup - Baked Apples - Fruits.
8. Cereals
- 9 - Candy lesson

IV Proteids

- 10 Egg experiments, with eggs.
- 11 Soft and hard boiled eggs - Omelet
12. Milk - Coagulation with Rennet.
13. Cheese - Macaroni and Cheese or cheese custard
- 14 Plain boiled or baked custard with caramel.
- 15 Meat experiments. Pan boiled beef

V Fats - Consideration

16. Pot Roast, Meat Croquettes.

17. Chicken or Fish
18. Gelatin Lemon ^{and} Orange jelly

VII Combinations

19. Proteid food, starch, and baking powder - Biscuit
20. Soda, Corn meal. gems.
21. Tea, coffee, cocoa and chocolate.
22. Pastry - Pie
23. Salad - Vegetable with boiled dressing
24. Sponge Cake
25. Leavened Cake.

Books for Use of Teacher

United States Bulletin on Household Subjects

Thompson's Food and Dietetics

Hutchison's Food and Dietetics

One Good Cook Book - Miss Farmer or Miss Hill

Miss Farmer's Food for the Sick and Convalescent.

Miss Parloa's - Home Economics Text

Miss Wick's - Home Nursing Text.

Waring's - How to Drain a House.

Lucy Wilson's Domestic Science in the Public Schools

Smith's Foods.