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A PRELIMINARY OUTLINE  
OF THE  
COURSES OF STUDY IN AGRICULTURE  
AND  
MINIMUM OF REQUIRED EQUIPMENT  
FOR THE  
FARM-LIFE SCHOOLS OF NORTH CAROLINA

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ISSUED FROM THE OFFICE OF  
STATE SUPERINTENDENT OF PUBLIC INSTRUCTION  
RALEIGH, NORTH CAROLINA



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## PREFACE

The law directs that the course of study and the equipment of all farm-life schools shall be subject to the approval of the State Superintendent of Public Instruction. This bulletin contains the preliminary outline of courses of study in agriculture and the minimum of general equipment for these schools that will be approved by him. It also contains suggested additional equipment needed for work in the special departments and suggested textbooks, reference books, and lists of books and bulletins for the library.

It would be neither economical nor wise to start one of these schools without the minimum of equipment found by experience, by careful investigation, and by consultation with experienced teachers and experts in other schools of this sort to be necessary for the successful teaching and training required of such schools. Therefore the minimum general equipment contained herein together with the other equipment in buildings, laboratories, land, etc., designated in Section 4 of the law must be provided by each school before the State Superintendent will recommend the State apportionment by the State Board of Education for its maintenance.

Some months ago I engaged Mr. E. A. Hodson, of the Department of Agriculture of the North Carolina College of Agriculture and Mechanic Arts, to take charge of the preparation of this bulletin. He has devoted his entire time during the summer to this work. In the preparation of the bulletin he has carefully examined the courses of study in similar schools in this and all other states; he has conferred with the members of the Committee on Vocational Education of the Department of High School Principals of the North Carolina Teachers' Assembly, receiving valuable suggestions and criticisms from time to time from the members of that committee; he has consulted experienced and successful teachers of agriculture and kindred subjects in this and other states; he made a special visit to Cornell University to get the benefit of the great library and the assistance of noted specialists in agricultural instruction there in the preparation of the courses of study and the compiling of the lists of the books and the suggested equipment.

It is hoped that this bulletin will serve the purpose for which it has been prepared by rendering valuable assistance in properly equipping and in wisely arranging and directing the work of the farm-life schools of the State. Six of these schools were in operation last year and arrangements have already been completed for starting ten new schools of this sort in the State this year. It is exceedingly important that these schools should start right, be properly equipped, provided with thoroughly qualified and experienced teachers, and have their work shaped to meet the needs of country life and to prepare country boys and girls for making the most out of country life and country things. Upon the success of these schools depends the establishment of other schools of this sort in other counties of this State. Upon their success depends the success of this hopeful movement to adapt the work of the country school to the needs of the country people and to improve country life through the more efficient training of each generation of country children.

The list of those who have rendered invaluable assistance in the preparation of this bulletin is too long to enumerate. I desire, however, to make general acknowledgment here of grateful appreciation to all of them.

A more complete bulletin containing more detailed outlines of the courses of study in the different subjects and many additional valuable suggestions is now in preparation. A bulletin on the work in Domestic Science and Household Economy will be issued later.

Very truly yours,

J. Y. JOYNER,

*State Superintendent of Public Instruction.*

RALEIGH, N. C., August, 1914.

# PRELIMINARY OUTLINE

OF

## COURSES OF STUDY IN AGRICULTURE

The course in Agriculture, as suggested in the accompanying outline, comprises about one-half of the 16 units making up the four years' work. This is more work than one man will be able to teach but it is impossible to give less work in agriculture and the related sciences if these Farm-Life Schools are to serve the purpose for which they were established. The first years of the school will not have a full four-year course of study in agriculture which makes it possible for one man to handle the work at present.

In buying the necessary equipment for the schools which are just being established, it will only be necessary to buy the apparatus needed to give the work of the first year, other equipment can be bought as it is needed the next year.

The equipment as suggested in this outline is in most cases the minimum that should be purchased to attempt to give that course. Where apparatus is suggested that is not necessary at present it is marked \*. The books for reference which are desirable but are not necessary at present, are also marked \*.

The prices given are catalog prices and in most cases there will be quite a reduction, especially if bought in quantities.

Arrangements can be made to get Mr. D. T. Gray, of the N. C. Experiment Station, to buy the horses and cows needed for these schools, provided the schools which are going to get animals, will all buy at the same time. In this way, these animals may be bought at a much less figure than would be possible for the schools to buy them separately. There will be no charge for this service by Mr. Gray.

The parallel reading courses, as indicated in the outline, are intended to cover some suggested text related to the subjects mentioned; assignments for reading are to be made and the class is expected to meet not less than eight times a year to discuss the subject read. This should apply to every student in the Farm-Life School.

It is recommended that the teachers of Agriculture and Domestic Science be called together as a committee at the next meeting of the North Carolina Teachers' Assembly for the purpose of discussing the course in Agriculture which is now being outlined.

Mr. K. H. McIntyre, of the Red Oak Farm-Life School, gave many valuable suggestions in arranging the course of study and equipment, and suggested the parallel reading courses.

SUGGESTED COURSE OF STUDY FOR THE FARM-LIFE SCHOOLS OF  
NORTH CAROLINA.

FIRST YEAR.

<i>Fall Term.</i>	PERIODS PER WEEK.		<i>Spring Term.</i>	PERIODS PER WEEK.	
	<i>Class.</i>	<i>Lab.</i>		<i>Class.</i>	<i>Lab.</i>
English .....	5		English .....	5	
Arithmetic .....	5		Arithmetic .....	5	
Physical Geography... .	4		Poultry .....	3	1
Plant Life .....	3	1	Plant Culture .....	3	1
Mechanical Drawing .....	2		Mechanical Drawing .....	2	
Farm Carpentry .....		2	Farm Carpentry .....		2
<hr/>			<hr/>		
Total .....	22 Periods.		Total .....	22 Periods.	

PARALLEL READING COURSE: General Science.

SECOND YEAR.

<i>Fall Term.</i>	PERIODS PER WEEK.		<i>Spring Term.</i>	PERIODS PER WEEK.	
	<i>Class.</i>	<i>Lab.</i>		<i>Class.</i>	<i>Lab.</i>
English .....	5		English .....	5	
Algebra .....	5		Algebra .....	5	
History .....	3		History .....	3	
Farm Animals .....	3	1	Dairying .....	3	1
Biology and Physiology..	3		Biology and Physiology..	3	
Vegetable Gardening ....	2	1	Vegetable Gardening ....	2	1
<hr/>			<hr/>		
Total .....	23 Periods.		Total .....	23 Periods.	

PARALLEL READING COURSE: A study of the social life in the country and organization of boys and girls clubs.

THIRD YEAR.

<i>Fall Term.</i>	PERIODS PER WEEK.		<i>Spring Term.</i>	PERIODS PER WEEK.	
	<i>Class.</i>	<i>Lab.</i>		<i>Class.</i>	<i>Lab.</i>
English .....	5		English .....	5	
Physics .....	3		Physics .....	3	
History .....	3		History .....	3	
Farm Crops .....	3	1	Farm Crops .....	3	1
Farm Accounting and			Fruit Culture .....	3	1
Mathematics .....	3		Farm Carpentry .....		2
Farm Carpentry .....		2	<hr/>		
Total .....	20 Periods.		Total .....	21 Periods.	

PARALLEL READING COURSE: Rural Sanitation and water supply.

## FOURTH YEAR.

<i>Fall Term.</i>	PERIODS PER WEEK.		<i>Spring Term.</i>	PERIODS PER WEEK.	
	<i>Class.</i>	<i>Lab.</i>		<i>Class.</i>	<i>Lab.</i>
English .....	5		English .....	5	
Soils and Fertilizers ....	3	1	Soils and Fertilizers ...	3	1
Rural Economics .....	3		Mathematics .....	3	
Feeds and Feeding .....	3		Feeds and Feeding .....	3	
Farm Machinery .....	3	1	Farm Machinery .....	3	1
Chemistry .....	3	1	Chemistry .....	3	1
Total .....			Total .....		

Total .....23 Periods.

Total .....23 Periods.

PARALLEL READING COURSE: Community improvement.

## SUGGESTED TEXTS FOR AGRICULTURE AND SCIENCE COURSES.

<i>Course.</i>	<i>Year.</i>	<i>Term</i>	<i>Text.</i>	<i>Author.</i>	<i>Publisher.</i>	<i>Price.</i>
Physical Geography	1st	Fall	New Physical Geography	Tarr	Macmillan	\$ 1.25
Poultry	1st	Spring	Farm Poultry	Watson	Macmillan	1.50
Plant Life	1st	Fall	Beginners Botany	Bailey	Macmillan	.60
Plant Culture	1st	Spring	Principles of Plant Culture	Goff	Stechert	1.00
Mechanical Drawing	1st	Year	Drawing Mechanical Series (books 1-6)	Thompson	Heath	.15 (each)
Farm Animals	2d	Fall	Farm Animals	Hunt & Burkett Wing	Orange-Judd	1.50
Dairying	2d	Spring	Milk and Its Products	Van Slyke	Orange-Judd	1.00
Biology and Physiology	2d	Year	Testing Milk Animals and Man	Kellogg	Holt	1.25
Vegetable Gardening	2d	Year	Vegetable Gardening	Watts	Orange-Judd	1.75
Farm Crops	3d	Year	Field Crops	Wilson & Warburton	Webb	1.50
Farm Management and Accounting	3d	Fall				
Fruit Culture	3d	Spring	Popular Fruit Growing	Green	Webb	1.00
Physics	3d	Year	First Principles of Physics	Carhart & Chute	Allyn & Bacon	1.25
Soils and Fertilizers	4th	Year	Soils and Fertilizers	Snyder	Macmillan	1.50
Rural Economics	4th	Fall	Rural Economics	Carver	Ginn	1.30
Feeds and Feeding	4th	Fall	Principles of Feeding	Burkett	Orange-Judd	1.50
Farm Machinery	4th	Year				
Chemistry	4th	Year	Chemistry of Common Things	Brownlee and others	Allyn & Bacon	1.25

## LIBRARY SUGGESTIONS.

The school should receive the Monthly List of Publications by the U. S. Department of Agriculture, the Farmers' Bulletins, and requests should be made for a list of available publications. Address request to Division of Publications, U. S. Department of Agriculture, Washington, D. C. The schools should request that their names be put on the mailing list of the North Carolina Department of Agriculture, Raleigh, N. C., and also the North Carolina Experiment Station, West Raleigh, N. C., to receive free publications from these Departments.

Some means of filing the bulletins belonging to the School should be provided. Pamphlet holders may be bought for \$7.00 per hundred from the Jesse Jones Paper Box Co., Philadelphia, or very serviceable pamphlet holders may be made from heavy cardboard by the manual training class, at much less cost.

Book shelves or cases should be made by the manual training class.

Suggestions and specifications for such cases will be furnished later if possible.

## LIST OF MISCELLANEOUS BOOKS THAT SHOULD BE IN THE LIBRARY.

<i>Title.</i>	<i>Author.</i>	<i>Publisher.</i>	<i>Price.</i>
*Encyclopedia of Agriculture.	Bailey .....	Macmillan .....	\$20.00
Farmers' Cyclopedia of Agriculture .....	Wilcox & Smith.....	Orange-Judd ....	3.50
Farmers' Cyclopedia of Live Stock .....	Wilcox & Smith.....	Orange-Judd ....	4.50
Principles of Rural Economics	Carver .....	Ginn .....	1.30
Landscape Gardening.....	Waugh .....	Orange-Judd ....	.50
Farmers' Manual of Law....	Willis .....	Orange-Judd ....	2.00
Farm Management .....	Warren .....	Macmillan .....	1.50
Farm Sewage .....	Santee .....	Orange-Judd ....	.50
Bacteria in Relation to Country Life .....	Lipman .....	Macmillan .....	1.50
Materials and Methods in High School Agriculture..	Hummel .....	Macmillan.....	1.25
Chemistry and Its Relation to Daily Life .....	Kahlenburg & Hart...	Macmillan.....	1.25

## MISCELLANEOUS SUGGESTIONS.

A rubber stamp outfit should be provided for marking stakes in the field work. The value of field work depends largely upon the labeling of varieties of crops and experiments. Stakes 4 inches wide,  $\frac{3}{4}$  inch thick, and 2 feet long from dressed boards, make the most convenient size.

Interesting exhibits may be obtained from several manufacturing companies without cost. The Postum Cereal Company, Ltd., Battle Creek, Mich., will gladly give a cereal exhibit for the asking.

An exhibit of corn products may be obtained from the American Manufacturers' Association of Products of Corn, 1236 First National Bank Building, Chicago, Ill.

An exhibit of cattle products may be obtained from Morris & Co., Union Stock Yards, Chicago, Ill.

The De Laval Cream Separator Co., New York, N. Y., will allow the Farm Life Schools a substantial discount upon separators by an agreement which has been arranged.

#### GENERAL EQUIPMENT FOR SCHOOL FARM.

One barn .....	\$600.00
Two work animals (mares).....	500.00
One two horse wagon.....	65.00
One two horse turn plow.....	8.50
One disc harrow.....	25.00
One drag harrow.....	12.00
One weeder .....	7.00
One cultivator .....	35.00
One combination planter.....	15.00
One single shovel plow.....	3.00
One double shovel plow.....	5.00
One set of two horse harness.....	25.00
Twelve hoes (gooseneck).....	9.00
Six rakes (garden).....	4.50
Two hay forks.....	1.50
One platform scales (merchants).....	15.00
Two shovels .....	2.00
One mattock .....	.75
One scythe .....	1.50
Total .....	\$1,334.75
*One mower .....	\$45.00
*One hay rake (one horse).....	20.00
*One gasoline engine (4 horse).....	125.00

#### PLANT LIFE.

<i>Title.</i>	<i>Author.</i>	<i>Publisher</i>	<i>Price.</i>
Text: Beginners' Botany.....	Bailey.....	Macmillan .....	\$.60

#### REFERENCES:

Experiments with Plants...Osterhout .....

EQUIPMENT: One microscope, double nose piece, 4 and 16 mm. objectives, 7.5 times ocular, \$27.00

Practically no other equipment will be necessary for this work. The experiments that are practical for the course may be performed without any special apparatus in most cases. The apparatus in the chemistry equipment may be used whenever necessary.

If small hand lenses are found necessary the student may be required to purchase these for his own use.

This course is expected to give an understanding of the relations of the plant to the soil, air and water; the structure of the plant; man's dependence upon plants; and, if possible, some work should be given in identification of plants.

## PLANT CULTURE.

<i>Title.</i>	<i>Author.</i>	<i>Publisher</i>	<i>Price.</i>
<b>TEXT:</b>			
Principles of Plant Culture. Goff .....	Stechert .....		\$1.00
<b>REFERENCES:</b>			
*Propagation of Plants.... Fuller .....	Orange-Judd ....		1.50
Nursery Book..... Bailey .....	Macmillan .....		1.50
<b>EQUIPMENT:</b>			
Seeds.			
Plants: Apple, peach, grape, etc.			
Bulbs.			
Hoes and rakes (general equipment).			
Seed testing boxes (to be made by students).			
Grafting wax .....			\$ .50
Grafting and budding tools.....			.75
Total .....			\$1.25

The different methods of propagation of plants, transplanting, and general considerations as to culture, care and management of garden and field plants will be presented in this course.

## POULTRY RAISING.

<i>Title.</i>	<i>Author.</i>	<i>Publisher</i>	<i>Price.</i>
<b>TEXT:</b>			
Farm Poultry..... Watson .....	Macmillan .....		\$1.50
<b>REFERENCES:</b>			
*How to Keep Hens for Profit .....	Valentine .....	Macmillan .....	1.50
*Poultry Breeding .....	Miller-Purvis .....	Sanders .....	1.50
*Turkeys and How to Grow Them .....	Myrick .....	Orange-Judd ....	1.00
Poultry Feeding and Fattening .....	Fiske .....	Orange-Judd ....	.50
Poultry Appliances.....	Fiske .....	Orange-Judd ....	.50
Principles and Practices of Poultry Culture.....	Robinson .....	Ginn .....	2.50
Domestic Birds.....	Robinson .....	Ginn .....	1.35

**EQUIPMENT:** The only equipment for this course that should ever be bought outright is:

- Ten pure bred fowls and one cock of an egg breed.
- Ten pure bred fowls and one cock of a meat breed.
- One incubator.
- One brooder.

All the houses, coops, feed hoppers, watering devices, etc., should be made by the manual training class.

It is not recommended that this equipment be bought the first year, for the reason that, in the case of new schools it will be much better to get some of the work well established which is of more importance and then add other equipment as rapidly as possible.

This course in poultry is intended to cover, in a general way, the types

and breeds, the purposes of the several types, the feeding, care, raising, handling and marketing of fowls, and the production and marketing of eggs.

One reason for placing this course in the first year was because of its general interest. This work also lends itself admirably to home project work, wherever the student can get permission from his parents to take charge of the poultry at home, he can actually follow the course in practice.

#### MANUAL TRAINING.

This course is to be practical in every detail. There is no text available that will meet the needs of this work.

The equipment for this course should be the very first to be purchased by the school. The class in manual training should make all of the tables, specimen and apparatus cases, work benches, tool boxes, poultry appliances, a large part of the physics apparatus, practically all of the soils apparatus, many pieces of apparatus for the chemistry equipment and various other things too numerous to mention. It is hoped that a list of the apparatus that should be made by this class can be supplied with details for construction sometime within the coming year.

A supply of well seasoned, dressed lumber should be obtained.

#### EQUIPMENT FOR WORK IN MANUAL TRAINING.

##### *Tools for General Use.*

1 hand saw, 9 points.....	\$1.65
1 hand saw, 11 points.....	1.65
1 steel framing square.....	.75
1 try square.....	.25
1 bevel square.....	.25
1 Stanley spirit level.....	.75
1 claw hammer.....	.60
1 jack plane, 14 inches.....	2.65
1 smooth plane, 8 inches.....	2.00
1 block plane, 4 inches.....	.75
1 set of screw drivers.....	.75
1 set of firmer chisels (5, $\frac{1}{4}$ to 1 inch).....	3.50
1 ratchet brace, 10 inch sweep.....	3.00
1 set Irwin auger bits (12x1x16).....	3.00
1 set square shank drill bits for iron (8, $\frac{1}{4}$ - $\frac{1}{2}$ by 16ths).....	1.00
1 iron vise steels faced jaws 24 lbs.....	3.00
1 screw for wood vise.....	.25
1 expansion bit, 1—2 in.....	1.50
1 bench stop.....	.25
1 revolving head harness punch.....	.75
1 50-foot linen tape.....	3.00
1 rule 5 feet folding.....	.25
1 set of compass saws.....	.50
1 caliper inside, outside.....	.75
1 divider.....	.25
1 mechanic's tool grinder.....	5.00
1 grind stone with fixtures.....	1.00
4 steel clamps, 6 inches.....	1.00
1 counter sink.....	.10

1 drawing knife .....	\$ .75
1 marking gauge.....	.25
1 adjustable hack saw frame.....	.60
12 hack saw blades.....	.60
1 machine hammer, 8 ounces.....	.75
1 oil stone, coarse and medium.....	.75
1 pair, 8 inch side cut pliers.....	.60
1 pair, 8 inch end cut pliers.....	.60
1 pair 12 inch tanners snips.....	1.25
1 saw set .....	.75
1 set steel "S" wrenches.....	1.50
1 monkey wrench, 8 inch.....	.25
1 Stilson pipe wrench, 8 inch.....	.75
1 set assorted files and wood rasps.....	2.50
1 spoke shave .....	.25
1 rivet setting punch.....	.50
1 cold chisel, $\frac{1}{2}$ inch.....	.15
1 cold chisel, $\frac{3}{4}$ inch.....	.25
1 drift punch .....	.25
1 set nail sets.....	.45
1 steel rivet set.....	.25
1 hatchet .....	.75
Total .....	\$54.90

*Individual Bench Set.*

1 hand saw, 9 points.....	\$1.65
1 hand saw, 11 points.....	1.65
1 try square .....	.25
1 framing square .....	.75
1 screw for wood vise.....	.25
1 smooth plane, 8 inch.....	2.00
1 bench stop .....	.15
1 drawing knife.....	.75
1 marking gauge .....	.25
1 hatchet, 4 inch.....	.75
1 claw hammer .....	.60
1 folding rule, 5 feet.....	.25
	<hr/>
	\$9.30
*Starret combination square.....	\$4.00
*Miter box .....	12.00
*Set of stocks and dies from 1/16 to $\frac{3}{4}$ U. S. Standard carriage thread .....	12.00
*Drill attachment for iron.....	3.00
*Breast drill .....	3.00
*Soldering outfit, complete.....	6.00
	<hr/>
	\$40.00
*Set blacksmith tools .....	35.00

## DAIRYING.

<i>Title.</i>	<i>Author.</i>	<i>Publisher</i>	<i>Price.</i>
TEXT:			
Milk and Its Products.....	Wing .....	Macmillan .....	\$1.50
Testing Milk.....	Van Slyke.....	Orange-Judd .....	1.00
REFERENCES:			
Dairy Cattle and Milk Pro- duction .....	Eckles .....	Macmillan.....	1.60
Testing Milk and Its Pro- ducts .....	Farrington & Woll... Stechert.....		1.25
*The Business of Dairying Lane .....		Orange-Judd.....	1.25
Clean Milk.....	Belcher .....	Orange-Judd.....	1.00
EQUIPMENT:			
4 cows .....			\$300.00
1 cream separator (135 lb.).....			32.50
1 Babcock tester (6 bottle).....			9.00
1 dozen milk test bottles, 10 per cent.....			1.25
½ dozen cream test bottles, 50 per cent.....			1.50
PIPETTES:			
1 9 cc., 1 17.6 cc., 1 18 cc.....			.60
1 acid measure .....			.15
1 milk scales .....			3.00
1 thermometer .....			.75
1 lactometer .....			.25
1 churn .....			4.00
1 butter printer .....			.90
Assorted wash brushes.....			1.50
Sulphuric acid, 1 gallon.....			60
Butter ladles and packers, assorted.....			1.00
Cream scales .....			10.00
Milking pails .....			1.00
Milk cans, etc.....			5.00
Total .....			\$373.00

A study of the breeds, types, feeding and care of dairy cattle; the production, testing, handling and marketing of milk and butter will be given in this course as comprehensively as possible to a class of this grade in the time allowed.

## FARM ANIMALS.

<i>Title.</i>	<i>Author.</i>	<i>Publisher</i>	<i>Price.</i>
TEXT:			
Farm Animals.....	Hunt & Burkett.....	Orange-Judd.....	\$1.50
Stock Judging.....	Craig .....	Stechert.....	1.65

## REFERENCES:

## Types and Breeds of Farm

Animals .....	Plumb .....	Ginn.....	2.00
Swine in America.....	Coburn .....	Orange-Judd.....	2.50

## Domesticated Animals and

Plants .....	Davenport .....	Ginn .....	1.25
The Horse .....	Roberts .....	Macmillan .....	1.25

## \*Animal Husbandry for

Schools .....	Harper .....	Macmillan .....	1.50
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## \*Beginnings in Animal

Husbandry .....	Plumb .....	Webb.....	1.25
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*Manual of Farm Animals.	Harper .....	Macmillan .....	2.00
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EQUIPMENT: No equipment is necessary for this course. Animals of farmers in the community may be obtained for judging.

It is intended that this course take up only a study of the breeds of farm animals; the use of the various types, and work in judging farm animals. The text suggested contains some chapters on feeding which should be omitted until the fourth year for a more intelligent understanding of this part of the work.

## BIOLOGY AND PHYSIOLOGY.

<i>Title.</i>	<i>Author.</i>	<i>Publisher</i>	<i>Price.</i>
TEXT:			
Animals and Man.....	Kellog .....	Henry Holt.....	\$1.25

## REFERENCES:

*Elementary Biology .....	Peabody & Hunt.....	Macmillan .....	1.25
*Insects .....	Chitendon .....	Orange-Judd.....	1.50

## EQUIPMENT:

- \*Insect nets.
- \*Collecting bottles.
- \*Insect pins.
- \*Potassium Cyanide.
- \*Insect museum cases.

This equipment may be bought as needed for collecting and preserving insects. The microscope suggested for the plant life work will also be needed in this work.

## VEGETABLE GARDENING.

<i>Title.</i>	<i>Author.</i>	<i>Publisher.</i>	<i>Price.</i>
TEXT:			
Vegetable Gardening .....	Watts .....	Orange-Judd .....	\$1.75

## REFERENCES:

Potato .....	Fraser .....	Orange-Judd .....	.75
Tomato .....	Tracy .....	Orange-Judd .....	.50
Bean Culture.....	Seavey .....	Orange-Judd .....	.50
Celery .....	Beattie .....	Orange-Judd .....	.50
Melon .....	Troop .....	Orange-Judd .....	.50
Cabbage .....	Allan .....	Orange-Judd .....	.50
Sweet Potato.....	Fitz .....	Orange-Judd .....	.50
Spraying Crops.....	Weed .....	Orange-Judd .....	.50
*Vegetable Gardening .....	Green .....	Webb .....	1.00
*Gardening, Farming .....	Corbitt .....	Ginn .....	2.00
Garden Making.....	Bailey .....	Macmillan .....	1.50

EQUIPMENT: Sash for cold frames.

This course is intended to be a study of the soils adapted to vegetable growing, the fertilization, the management and care of the soil; the study of varieties of vegetables, methods of identifying and combating insect and plant diseases; the use and the marketing of vegetables.

## FIELD CROPS.

<i>Title.</i>	<i>Author.</i>	<i>Publisher.</i>	<i>Price.</i>
TEXT:			
Field Crops.....	Wilson & Warburton ..	Webb .....	\$1.50

## REFERENCES:

Corn .....	Bowman & Crosley ...	Stechert .....	2.00
Study of Corn.....	Shoesmith .....	Orange-Judd .....	.50
Tobacco Leaf.....	Myrick .....	Orange-Judd .....	2.00
Cereals in America.....	Hunt .....	Orange-Judd .....	1.75
Forage and Fiber Crops.....	Hunt .....	Orange-Judd .....	1.75
Farm Grasses in United States .....	Spillman .....	Orange-Judd .....	1.00
Corn Crops.....	Montgomery .....	Macmillan .....	1.50
Forage Crops.....	Voorhees .....	Macmillan .....	1.50
Alfalfa .....	Coburn .....	Orange-Judd .....	.50
Southern Field Crops.....	Duggar .....	Macmillan .....	1.75

EQUIPMENT: No special equipment.

This course should take up in detail the soils, and fertilizers for each crop of any importance in the community with a study of diversification and crop management; the methods of identifying and combating attacks of insects and plant diseases, and the harvesting, uses, and marketing of the crops. A portion of the year should be devoted to the special crop which is of most importance in the community.

## FRUIT CULTURE.

	<i>Title.</i>	<i>Author.</i>	<i>Publisher.</i>	<i>Price.</i>
TEXT:				
	Popular Fruit Growing.....	Green .....	Webb .....	\$1.00
REFERENCES:				
	Principles of Fruit Growing	Bailey .....	Macmillan .....	1.50
	American Apple Orchard...	Waugh .....	Orange-Judd ....	1.00
	American Peach Orchard...	Waugh .....	Orange-Judd ....	1.00
	Harvesting, etc., Fruits....	Waugh .....	Orange-Judd ....	1.00
	*American Fruit Culturist.	Thomas .....	Orange-Judd ....	2.50
	*American Grape Culture..	Munsen .....	Orange-Judd ....	2.00
	The Pruning Book.....	Bailey .....	Macmillan .....	1.50
EQUIPMENT:				
	6 pruning shears .....			\$6.00
	2 pruning saws .....			2.00
	1 tree pruner, 8 feet.....			1.00
	1 barrel spray pump, complete.....			25.00
	Insecticides and fungicides.....			
				\$34.00

This course is intended to cover, in a general way, all of the common orchard fruits which may be grown in the section of the state in which the school is located. The planting, care, cultivation, fertilization of the orchard and the identification and eradication of insect pests and plant diseases which infest orchards, and a study of spraying apparatus, pruning, and the handling and marketing of fruit will each receive a good portion of the time devoted to the subject.

## SOILS AND FERTILIZERS.

	<i>Title.</i>	<i>Author.</i>	<i>Publisher.</i>	<i>Price.</i>
TEXT:				
	Soils and Fertilizers.....	Snyder .....	Macmillan .....	\$1.50
REFERENCES:				
	Soils and Fertilizers.....	King .....	Macmillan .....	1.50
	Soils .....	Burkett .....	Orange-Judd ....	1.25
	*Farm Manures.....	Thorne .....	Orange-Judd ....	1.50
	*Fertilizers and Crops.....	Van Slyke .....	Orange-Judd ....	2.50
	Soils and Soil Fertility....	Whitson & Walster ..	Webb .....	1.25
	First Principles of Soil Fer-			
	tility .....	Vivian .....	Orange-Judd ....	1.00
	*Irrigation and Drainage..	King .....	Macmillan .....	1.50
	Soils .....	Lyon & Fippin .....	Macmillan .....	1.50
	Soils and Crops.....	Hunt & Burkett .....	Orange-Judd ....	1.50
	*Soil Fertility and Perma-			
	nent Agriculture.....	Hopkins .....	Ginn .....	2.25

EQUIPMENT: At present no laboratory equipment is suggested for the reason that there will be practically none that will need to be bought outright. As soon as the course is outlined in detail a suggested list of apparatus and details for construction will be furnished.

This course is intended to cover the following subjects:

The origin and classification of soils; soil water and its relation to soil fertility and crop production; availability and uses of plant food; the use of fertilizers and manures, drainage and soil management.

#### FEEDS AND FEEDING.

<i>Title.</i>	<i>Author.</i>	<i>Publisher.</i>	<i>Price.</i>
TEXT:			
Principles of Feeding.....	Burkett .....	Orange-Judd ....	\$1.50

#### REFERENCES:

Farm Animals.....	Hunt & Burkett .....	Orange-Judd ....	1.50
Profitable Stock Feeding...	Smith .....	Webb .....	1.50
*Feeds and Feeding.....	Henry .....	Stechert .....	2.25

EQUIPMENT: No equipment necessary.

The composition of feeds, the functions of fat, protein, starch, and ask in the milk and meat production, the computation of rations and practical experience in feeding the animals belonging to the school.

#### FARM MACHINERY.

<i>Title.</i>	<i>Author.</i>	<i>Publisher.</i>	<i>Price.</i>
TEXT: No suitable text has been found.			

#### REFERENCES:

Farm Machinery and Farm

Motors .....	Davidson & Chase .....	Orange-Judd ....	\$2.00
Agricultural Engineering...	Davidson .....	Webb .....	1.50

EQUIPMENT: A set of blacksmith tools should be included in the equipment of this course. A gas engine which will be needed in the school for running the cream separator and various other purposes should be purchased as soon as possible. Other equipment can be supplied as the course develops.

This course is intended to familiarize the student with the care and repairing of farm machinery, harness, etc. At present there has been so little work done of this kind in the high schools that the work will depend very much upon the initiative of the instructor.

#### MINIMUM EQUIPMENT, FIRST YEAR.

Library .....	\$100.00
General Farm equipment.....	1,334.75
Complete equipment for dairy.....	373.00
Manual training equipment (general).....	54.90
Manual training, (individual bench sets, 5, each \$9.30).....	46.50
For course in Plant Life.....	30.00
For course in Plant Culture.....	1.25
Total .....	\$1,940.40

#### NOT NECESSARY FIRST YEAR.

Course in Fruit Culture.....	\$34.00
Course in Poultry Raising.....	50.00
Total .....	\$84.00
Complete total.....	\$2,024.40

## ADDRESSES OF PUBLISHERS REFERRED TO IN BOOK LISTS.

Orange-Judd Company, 315-321 Fourth Ave., New York, N. Y.

The Macmillan Co., 64-66 Fifth Ave., New York, N. Y.

Webb Publishing Co., 55-79 East Tenth St., St. Paul, Minn.

D. C. Heath & Co., 231-245 West 39th St., New York, N. Y.

Henry Holt & Co., Publishers, 34 W. 33d St., New York, N. Y.

Allyn & Bacon, 36 W. 37th St., New York.

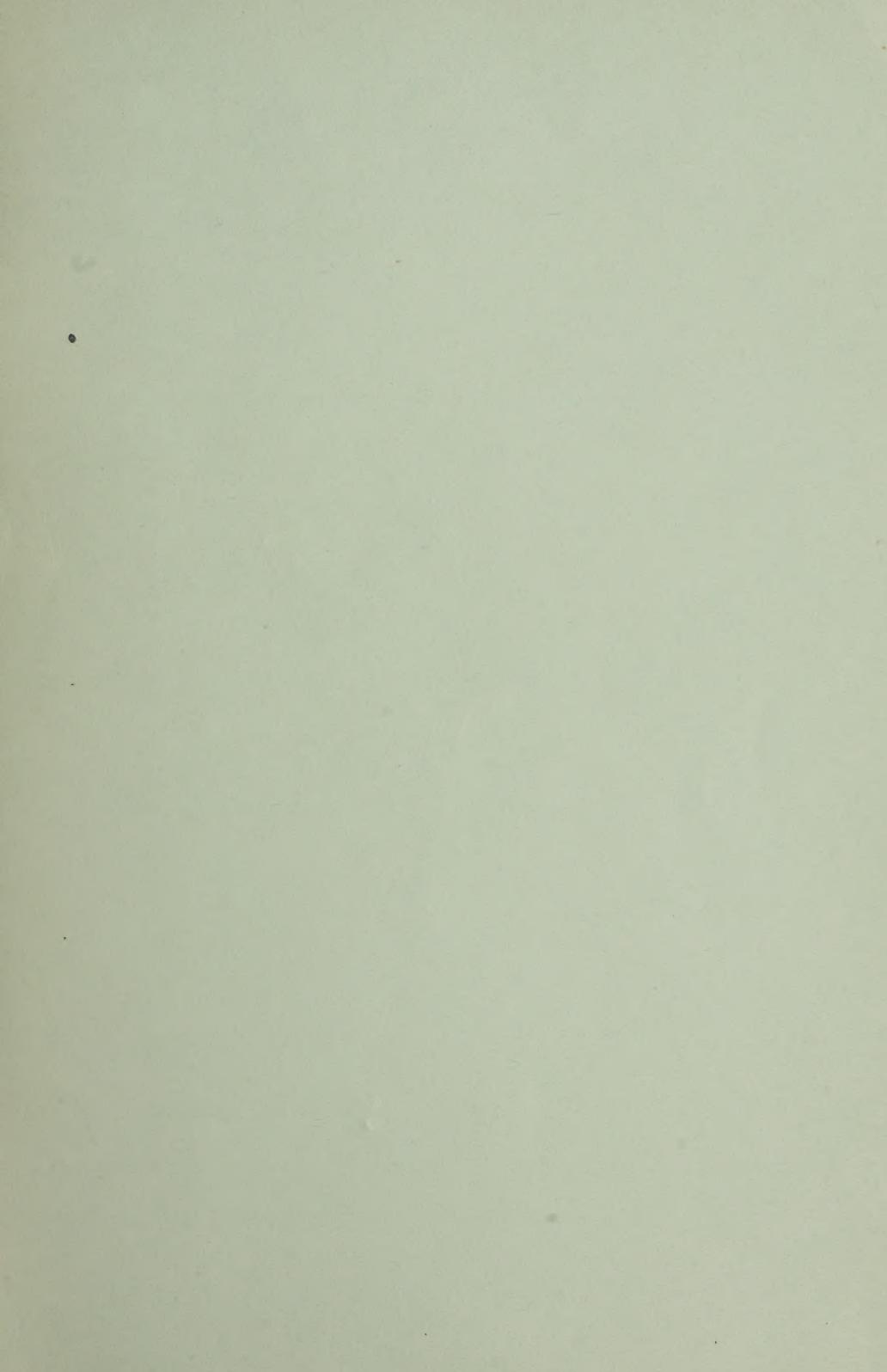
Several books are given as published by Stechert. (Where a book is published by some company from which possibly only that book would be bought it will be found much more satisfactory to buy all such miscellaneous books from G. E. Stechert & Co., 151-155 W. 25th St., New York. Any book published in America may be obtained from this company and in most cases at the same figure as if bought from the publisher.)

The Bausch & Lomb Microscope outfit, No. "F-2," will possibly be the most desirable for this work. This is sold by Arthur H. Thomas Co., Philadelphia. A similar microscope and the one that is very highly recommended by biologists, sold by Ernst Letiz, 30 E. 18th St., New York, will cost about \$30.00.

The equipment for the courses in Fruit Culture, Vegetable Gardening, etc., may be obtained from Henry A. Dreer, Philadelphia, Pa. In buying the farm machinery, if the schools will take up the matter with the manufacturers, many donations will, in all probability, be made and better prices may be obtained than from the local dealer.







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