A PRACTICAL THREE-TEACHER HIGH SCHOOL FOR AGRICULTURAL KANSAS

by

Hugh Durham

A thesis submitted to the Department of Education and the Faculty of the Graduate School in partial fulfillment of the requirements for the Master's degree.

Approved Arvin Olin
Department of Education

January, 1915.

A PRACTICAL THREE-TEACHER HIGH SCHOOL FOR AGRICULTURAL KANSAS

The Problem

Agricultural Kansas is the whole state, but for the purpose of this bulletin it refers to those communities concerned with and supported directly by agricultural enterprises. These are found all over the length and breadth of the state and include three-fourths or more of the good citizenship of the state. A large part of them send their children to one-teacher schools. Some have centers in many of our second class cities (for most of our second class cities are truly agricultural); others find natural centers in our 564 cities of the third class or small towns, in a number of which are already consolidated schools; a few others have community centers in rural consolidated districts or township high schools.

What are satisfactory schools for this large majority of the citizenship of Kansas? That the present ones are unsatisfactory in a large measure is everywhere apparent and is herein taken for granted. To make the problem more definite, I propose to present a school providing the most important fundamentals of education for an agricultural people at the minimum of outlay; providing advantages for the country child equivalent to those of the city child; presenting not all the advantages that may be offered by an agricultural community, strong financially, but those most worth while and which should be offered first.

Two False Ideals

Improve the rural schools has been the constant cry in Kansas for nearly two decades. But most of the effort has been expended in imitating large city schools. We have usually acted as if we believed that if we could take a school--elementary and high school, from one of the large cities of our state or country and transplant it into a rural community, then and not till then would the country child have equal advantages with the city child. What nonsense. A school should articulate with, be an integral part of, serve and prosper the life of its community. A school adapted to an agricultural community in Kansas would be as abnormal and unserviceable in Gary, Indiana, Chicago, Illinois, or Kansas City, Kansas, as a school well adapted to those cities would be in the agricultural community. Every type of community should have its own type of school, and to a certain extent, every individual community should have its own individual school.

Another false ideal has led astray and while in the midst of prosperity we have been building up high schools it has reduced their adaptability and hence their service-ability. This is the ideal that the first course provided by a local high school should be a college prescribed course, a college entrance course. Hundreds of high schools in Kansas have gone thus far and practically no farther. Others are still struggling believing that they will have done the greatest possible good to their communities when they have become first class, accredited high schools.

Now, college administrators are men of good intentions. I would not indict them. They have a powerful influence in shaping the educational system of any state. Their power is almost absolute. But they have looked through their own glasses at what they called the children of a commonwealth and have seen only those entering the freshman class of the college. They have said what was best for me is best for you. True enough, as far as the freshman class of the college is concerned, but how about the seventy-five to ninety-five per cent that never enter college? Mr. College Professor of the old type never saw them, and without seeing them he continued to write high school courses of study and inspire misguided and well intending communities to accept them as the best school work they could possibly provide for their children.

But a new leaven is at work. Old college professors are changing their attitude on the question and young ones have caught the new spirit in their growth. The last decade has seen great changes in college entrance requirements and now we find scores of college professors proclaiming that the first duty of a high school is to its community and to those of the community who may not be able to go to college. This they admit if they are not willing to go with the most progressive and awakened leaders of industrial interests the country over and proclaim that the course of study that best prepares the youth for economic as well as social efficiency in his community constitutes the very best preparation for admission to advanced work along allied lines either in the upper grades of the high school or the freshman class of the college.

General Plans for the Proposed High School

The practical high school herein proposed is based on the "six and six" plan. Six years of school life with the ordinary pupil reaches to the period of early adolescence, a turning point in the life of the child, an age when a broader experience and opportunity is demanded. Here is as near the proper time as educators and psychologists can find for the beginning of secondary education and work above the sixth grade is hereafter spoken of as high school work in this bulletin.

This three-teacher high school is to be composed of seventh, eighth, ninth and tenth grades or years of school work. The seventh and eighth grades are to be somewhat differentiated from the ninth and tenth grades and are to be under the charge of one teacher for, in most cases, three-fourths of the school day. But their interests can not fail to be aroused by this school if well taught. They and their parents will feel they can not afford to drop out and the opportunity for doing so being reduced to a minimum, the work will be carried to completion in the tenth grade, when, if further work is not offered at home, there will be a greater incentive to do further work away from home than there is under the present plan to do work above the eighth grade away from the home school.

Though our first six grades need reorganization, this course is planned to accept their work as nearly as possible. Retardation, however, must be reduced. Provision must be made for pupils who fail in some respects in the book work of the first six grades to be passed into the high school at the age of thirteen, record being made of their deficiencies, and there being given a fair opportunity to do whatever they can in a satisfactory way. The old idea of making bugbears of passing grades to every boy, however motor minded, will defeat the purpose of any school.

Kansas requires the attendance of pupils at school until sixteen years of age unless they complete the so-called common school course before that time. With the organization herein provided, the eight grade diploma should be dropped. Failure to pass a prescribed examination at the end of the sixth grade should never be an absolute bar to admission to the high school, as before stated, and the compulsory age should remain sixteen or otherwise the completion of the ten years' work.

The proposed school is to deal with and develop youth between the ages of twelve and sixteen. This is the most critical period of life and the time when our educational system breaks down most seriously. Every boy and girl needs the guidance, the oversight and the inspiration of strong men and women teachers during this period. They are normally enthusiastic to know and to do, and their experience should be broadened and directed in useful ways. The failure to have teachers big enough and broad enough to deal with this newly awakening life makes a blemish on the life of many a youth. Not less than three teachers can be expected to provide adequate instruction for boys and girls during this period, and if three teachers must be provided to offer the varied instruction essential, the question becomes one of providing the community sufficiently large and sufficiently wealthy to use advantageously the service of these teachers.

This high school is essentially a community high school. It will serve primarily pupils between the ages of twelve and sixteen, but in reality the whole community, and Kansas must in some way provide these communities before the country school problem can be relieved over more than very limited areas for limited periods of time. Consolidation may provide the community as it has in some places in the state. The township high school may be made a serviceable organization. Let the seventh and eighth grades from the whole township be cared for at the township high school as herein provided and the entire school work of the township can be easily revitalized. But the community must be provided, and as soon as the good citizens of Kansas really understand this they will make a way whereby the advantages of the country boy may be made comparable to those of the city boy.

At the present time, however, there are several hundred schools in Kansas, located in typical agricultural centers, that should be aroused to adopt the course herein provided. They are now employing three or more teachers and offering one to four years of high school work of the traditional college entrance type. The four years' work herein provided would be worth far more to any agricultural district in Kansas than the six years of high school work (grades seven to twelve inclusive) of the traditional type.

Here is a bit of history not unusual: A certain village in Kansas voted recently to establish a four year high school course. They are now offering the ninth and tenth grades of the work, and the course offered is as follows:-- Ninth grade, algebra, English, Latin,and ancient history; tenth grade, geometry, English, Latin, and modern history. The teacher is not to blame, nor the school board, nor the citizens assembled in annual school meeting, for they are all alike misguided by false ideals. Is such a course what that district needs? Positively no. It is my earnest desire to suggest a far better course of study and organization for this school district and for the several hundred others laboring under somewhat similar conditions in the state of Kansas. Further, to suggest a plan adapted to the needs of the scores of community centers that the immediate future should see formed in the small villages and strictly rural sections of the state, whether the means used of organizing these centers be consolidation, the establishment of township high schools, or some other method hereafter provided by law.

The Curriculum of the Three-Teacher School

Seventh Grade

Reading
Grammar and Composition, including spelling, penmanship, and common business forms
History (1915-'16 and every second school-year thereafter)
Arithmetic (1916-'17 and every second school-year thereafter)
Elementary Agriculture (1915-'16 and every second school-year thereafter)
Geography one-half year and Community Civics one-half year (1916-'17 and every second school-year thereafter

For the Boys:

Drawing, Bench Work, and Elementary Construction, one-fourth of each day's work

For the Girls:

Elementary Cookery--one-fourth of each day's work (1915-'16 and every second school-year thereafter)
Elementary Sewing and Home Furnishing--one fourth of each day's work (1916-'17 and every second school-year thereafter)

Eighth Grade

Classics, Grammar and Composition, including spelling and penmanship
Hygiene one-half year and Kansas History one-half year
History, Arithmetic, Elementary Agriculture, Geography, and Community Civics as provided in the seventh grade

For the Boys:

Drawing, Bench Work, Elementary Farm Carpentry--one-fourth of each day's work

For the Girls:

Cookery or Sewing and Home Furnishing as provided in the seventh grade

Ninth Grade

English--Practical Rhetoric
Agricultural Arithmetic one-half year and Practical Elements of Algebra and Mensurational Geometry one-half year
Farm Crops one-half year
Poultry, Farm Dairying, and Gardening one-half year

For the Boys:

Mechanical Drawing, General Construction, Cement Work, etc.

For the Girls:

Sewing and Home Problems (1915-'16 and every second school-year thereafter)
Cookery and General Housekeeping (1916-'17 and every second school-year thereafter)

Tenth Grade

English--Interpretation of current English and classics
History and Citizenship
Practical Physics one-half year and Civics one-half year

For the Boys:

Live stock and Farm Management and Accounts

For the Girls:

The alternating courses listed for the girls in the ninth grade

Purpose of the Different Courses

Introductory-- Our elementary course needs reorganization. It has been built up by years of accumulation to be the weighty, unadaptable course that it is. It should be built up as a unified whole composed of correlated parts (the so called subjects) and with an eye single to the development of the child, the country child, for six years of school life. The child should have four recitations each day and the elementary teacher not to exceed twenty. Arithmetic should not be taught except incidentally (in connection with the other work as the pupils have need for the elements) during the first two years. A few combinations of grades in classes, such as third and fourth, also the fifth and sixth in language and the fifth and sixth in reading will reduce the number of recitations to twenty each day. A proper concrete and environmental basis can then be given to the work by well prepared teachers who realize the importance of children being taught correctly and forming correct habits of thinking and doing from the beginning. Such teachers with six grades and such a reorganized and redirected course of study would have a reasonably good opportunity of doing commendable work.

Kansas should make legal provisions for reducing the elementary course to six years as soon as the secondary course can be adjusted to this much needed change.

The academic work provided for the seventh and eighth grades is based on the first six years' work as taught in our best country and small city schools today. It is to be built up on conditions as they exist and can be improved as they improve. Faithfully taught by efficient teachers, pupils should enter the ninth grade of this school with a better academic preparation than even a minority of the best eighth grade graduates today, and besides this the boy will have spent one-fourth of each day for two years in ~~a~~ practical, manual construction work, work that will correlate with his other work and especially with his home problems, will arouse his interests and be an invaluable element in his development. The girl will spend a similar time in work adapted to her needs.

<u>Reading</u>-- Work under the head of reading has been included in the seventh year. Our pupils can't read too much good literature. Reading is generally too little emphasized in our schools. This should be a full year's work devoted to careful study (including dictionary work and spelling) of various kinds of standard selections, and serious, persistent drill for easy, natural and appropriate

oral expression. Pupils weak in this subject may often repeat it to advantage in the eighth grade. In fact, it would be best if many of the selections studied and read were to be used only every second year. By such alternation newness would stimulate interest. Many of the varied selections of Searson and Martin's "Advanced Reader" are excellent for this work. These should be supplemented, however, by many good selections with a distinctly scientific or country emphasis.

Grammar-- The grammar work of the seventh and eighth grades should include simply the elements of technical grammar. They should be taught in such a way as to emphasize the rules governing the relation of words, phrases, clauses and sentences in accurate speech and written composition. The art of language has been taught for six years and now its expression in oral and written forms will be rationalized and rules developed for many of the common relationships. These are the elements of the science of grammar desirable in the seventh and eighth grades. They should divide time with the study of classic selections and continued oral discourse and written compostion on familiar problems. Not how much but how well should be the motto. Such selections as "Evangeline" and "The Perfect Tribute" may well be used with others having a more definite rural significance including some current literature from papers and magazines. The standard page, legible penmanship, accurate form of a business letter, etc., should be emphasized throughout the work.

History-- The one year's work in U. S. History provided for either the seventh or eighth grades should present a chronological view of the development of our country. Emphasize industrial and social development. Adequate time is provided that pupils with a reasonable preparation in biography and general reading for the course, will have at the close of this year's work a significant view of our country's growth.

Arithmetic-- One year's work in arithmetic is provided for either the seventh or eighth grades. In no part of our common school course is there a greater waste of time and energy on the part of both pupil and teacher than in the arithmetic work. I thoroughly believe it is not an exaggeration to say that more than half of the time now spent on arithmetic in our grades the state over is worse than wasted. The concrete basis of the work is usually not given. Dry text book drill on impractical and impossible problems consumes a majority of the time.

This one year's intensive work should first review and ground the pupil in the fundamental operations. Common fractions and decimals should be thoroughly understood and skill acquired in their use. The fundamentals of percentage and simple interest should then be mastered. A few of the practical things in denominate numbers ~~numbers~~ should be reviewed and applied and to these could well be added a few of the practical things included under the head of mensuration.

The equation should be developed by use of the balances and such principles as adding the same number to both members or multiplying both members by the same number does not affect the equality, should be readily applied. The use of the equation should simplify the work. The relationship of the subjects should be shown. The inherent unity of the divisions of arithmetic is now lost and the divisions presented as complex and unrelated by a majority of teachers and even of text books. Let such be avoided. I hope to make myself clear by two illustrations: The principle -- "The product of two factors divided by one of them gives the other," has a wide application in all the indirect processes of arithmetic. Secondly, percentage is a multiplication process and involves little that the pupil should not know before he reaches the subject. It is but a wide use of one particular kind of decimal or common fractions. The percentage itself is a product. Here is the only rule necessary:

$B \times R = P$

Be sure the pupil understands it and if this be true it then follows from the first of the above mentioned principles that:

$B = \frac{P}{R}$

and $R = \frac{P}{B}$

Any pupil having acquired skill in common fractions and decimals (the very backbone of arithmetical processes) will work this out like a flash.

<u>Elementary Agriculture</u>-- This course is to be offered every other school-year so that all pupils will have the work before entering the ninth grade. It is to be a general course based on, amplifying and correcting the pupils' experience. Our common school text, written by professors of the Agricultural College and published by the state is quite adequate for the text book basis of the course. Well taught by one in sympathy with the rural point of view, this course will be effective.

<u>Geography</u>-- This subject as frequently taught degenerates into a course in nomenclature. Every little

river, cape and mountain peak on the earth being required to be memorized. This may be interesting to some, but it is useless to practically all. This half year's work should emphasize the present political, industrial and commercial conditions the earth over. The common and useful phases of physical geography should be included. Usually, however, the physical side will be introduced as an explanation of present conditions,-- industrial, commercial or political.

Community Civics-- This term should represent quite sufficiently what the one-half year's civics work should be. The study should begin with the family and the school and extend to the larger and larger organizations of which the pupil is a part. It should be informational as far as time will permit, but it is primarily to lead the pupil to action, to know the duties of a citizen and desire to do his part. The course should conclude with a short, practical, elementary study of our national government.

Hygiene-- The one-half year's work designated as "Hygiene" is so named because the chief purpose is practical instruction regarding the laws of personal health. The elements of human anatomy and physiology must be taught as the bases of hygiene, and rural sanitation and prevention of disease should receive all consideration possible in the time.

Kansas History-- Some may think the time given to Kansas history somewhat excessive in this course of essentials. The importance of the subject will justify this time. Emphasize industrial and institutional development. Stimulate a pride in the state and its past and present worthy citizenship.

English-- The English of the ninth grade should be practical composition and should consider carefully all the elements necessary in producing a written page or written composition. Much of the work should be synthetic, beginning with the sentence, the relation of its parts, punctuation and capitalization; passing to the paragraph, developing function, unity, etc. Lastly, providing much practice in short composition. The pupil should be taught to outline his thought and follow his outline in writing. Written work, too, should usually be preceded by oral. Subjects should be selected in which the pupil is or could be interested. Matters of current importance may be treated to advantage much of the time. Often subjects under discussion in the agriculture or sewing or cooking classes might be selected for use in the composition work. Such subjects might be regularly assigned after conference with the teachers of those respective classes. Written work should be handed in daily or almost daily and all of it should be carefully corrected and returned promptly. Corrections should be constructive and every paper with any serious mistake thereon or with a very limited number of minor mistakes should be promptly rewritten. It should be a shame for a pupil to pass this course and not be able to write easily and readily any ordinary business or friendship letter and have it correct in every detail. The English teacher should have supervision of the composition work of the entire high school and should take such steps as are possible and necessary to make the standards of this class the standards of the school. The aim of this year's work is the development of the greatest possible power in the arts of correct expression.

Following the year of composition work in the ninth grade should be a year devoted chiefly to interpretation of literature. About one-third of the time could well be devoted to English classics, such as "Merchant of Venice," "Deserted Village," and "Lady of the Lake." Another third could be profitably used in the study of American classics, selections more difficult than those read in the eighth grade being used. Fully one-third of the time should be devoted to good current newspaper and magazine English. Understanding, appreciation, love of reading, are the objects to be accomplished and as much should be read as possible consistent with the purpose. The list of outside reading should be as large as that for class use and definite written and oral reports should be made on all such work.

<u>Mathematics</u>-- The one year's course in mathematics in this school is far from the usual type. But the words, practical, useful, functioning, are to apply to every phase of the work. "Bring the farm into the school and project the school into the farm," the words of Colonel Parker, shall be our motto, and must be apparent in every lesson assignment. The first half of this year will be devoted to farm arithmetic--arithmetic usable in various farm operations, or the common or not unusual business transactions related thereto. If the arithmetical equation has not been taught in the seventh and eighth grades as therein provided, it should be introduced here and in all respects this half year's work is presumed to follow the mastery of the former. The course will include rapid review of fundamental operations, including fractional operations, farm accounts, practical denominate numbers, measurements, and construction problems. The graphical representation of various data, statistics and comparative studies is so common in papers and bulletins that it should be understood here and sufficient practice provided to make

it usable by the pupils. Percentage is important. The principle should be reviewed and its common applications in simple interest, compound interest, taxes, insurance, rations, fertilizers and specific gravity studied. Further work of the most practical sort should be provided in ratio, proportion and more practical problems in mensuration, including those involving extracting the square root. A text book that will be a useful and reliable guide for the teacher of this course is published for the students of the School of Agriculture in this college. The authors are Professors W. T. Stratton and B. L. Remick. No intelligent teacher, however, will kill the course by following a text book slavishly.

About two-thirds of the time in the last half of the year will be devoted to the practical elements of algebra, leaving about six weeks for a few practical things in geometry. No text can here be suggested but this field is developing so rapidly, a suitable text may appear at any time. Present positive and negative numbers by the use of the theromometer, latitude and debts. Present but the elements of the fundamental operations and proceed at once to practical problems in equations. Graph linear equations in two variables and use the graph as one means of solving simultaneous equations in two unknowns. Add practical problems in number and difficulty sufficient to use well the time provided.

The last six weeks should be used to make clear some simple, practical applications of geometry. Define and illustrate straight line, angle, complement, supplement, and conjugate. Fix the relation of different angles by equation problems. Emphasize the right triangle and the circle. Solve most of the problems graphically.

History and Citizenship-- Not much time should be given to the details of war. Emphasize social, economic, and industrial phases of development. Keep in close touch with current history, showing relation between important developments of the past and the status today of the same movements. Seek in every way possible to make the subject function in the life of the pupils. The proper attitude toward the problems of today is the primary purpose of the course. Do this and the course may be a valuable training for citizenship. Teach most subjects topically. Use a text and have a number of good reference histories in the library. Take some time if possible for understanding some of the fundamentals of the law of contracts. Huffcutt's "The Elements of Business Law" is a good teacher's guide in this phase of the subject.

Civics-- The one-half year's civics work is based on the preceding "Community Civics." Emphasize local and state government, however. Our entire governmental machinery is studied principally for its relation to and assistance in the understanding of one's environment. The course must stimulate useful citizenship and economic efficiency.

Practical Physics-- This half year's course should aim at a better knowledge of and a greater ability to handle as well as a scientific explanation of everyday problems. The following suggestive outline was hastily prepared by a friend who is an efficient teacher of physical science and in thorough accord with the point of view of this bulletin. I believe it will be very helpful to the teacher of this course:

I. Mechanics
  A. General considerations
    1. Physics a nature study
    2. Why study physics?
    3. Units -- fundamental and derived
    4. Measurement -- Purpose of. Three steps is process necessary in order that Nature's forces may be harnessed
    5. Matter -- Definition and illustrations. How measured. Why measured.
    6. Force -- Same points as under matter
    7. Energy -- " " " " "
  B. Machines
    1. Lever
      (a) Definitions of lever, terms and illustrations of same
      (b) The law of the lever and its applications to levers
      (c) Practice in seeing levers in machines and in computing them
      (d) Mechanical advantage of levers
    2. Pulleys -- Same points as under the lever

C. Water
   1. Seeks lowest level. Why?
   2. Uses in nature
   3. Water systems, from springs to latest improved city supply
   4. Law of pressure and its application to water tanks,etc
   5. The hydraulic press, elevator, etc., and Pascal's law

D. Air
   1. Physical picture of the sea of air in which we live
   2. Why air's pressure can not be measured as that of water
   3. T~~o~~rricella's problem of measuring air pressure and the barometer
   4. Air and its uses in case of both plants and animals

E. Energy, Work and Power
   1. The work law and its applications to people and to machines
   2. Relation between work and energy
   3. Potential energy of the water above the mill dam, etc.
   4. Kinetic energy and its relation to potential energy
   5. Power -- What is it and how to compute it in case of machines

II. Heat

A. Story of the sun and his planets

B. Story of the great forests in past ages and their relation to fuels

C. Fuels
   1. Nature of and choice of for various purposes
   2. How find the heat value of
   3. Cost of and use of

D. Boiling
   1. What boiling means
   2. Heat required to steam a pound of water
   3. How buildings are heated by steam
   4. Boiling on mountains and in valleys in relation to cooking

E. Ability of bodies to hold heat
   1. Heat to change one pound of any substance one degree in temperature
   2. Heating houses by use of hot water

F. Heat and Air
   1. How heat changes the weight of a given volume of air
   2. Heat and the great winds of the earth
   3. Heat and ventilation of houses
   4. Heating houses by means of hot air

G. Heat and Work
   1. Heat energy and work in the steam engine and gas engine
   2. Work changed into heat energy in frictions and in bodily exercise

H. Heat and Clothing
  1. Heat conductivity in relation to clothing, walls of houses, ice chests, and refrigerators, etc.
  2. Different kinds of stuff and their abilities to conduct heat.

I. Refrigeration
  1. Heat used to melt one pound of ice
  2. How ice chests are kept cool by melting ice
  3. Nature as an ice making machine
  4. Ice making machines, how made? Principle of, cost of ice and corresponding returns from its use.

III. Electricity

A. Lightning
  1. Nature of and damage done by
  2. Protection of life and property from damages
  3. Franklin and his kite experiment
  4. The story of the electron

B. Batteries
  1. Factories which manufacture electric charges
  2. Measurement of current of batteries. Amperes
  3. Measurement of voltage of batteries. Volts
  4. Uses of voltmeters and ammeters
  5. Cost and care of batteries

C. Chemical effect of current
  1. Electroplating-- anode, cathode, plating solution, preparation of articles to be plated. Polishing. Law of plating.

D. Magnetic effect of current--electromagnets
  1. Construction and strength of
  2. Uses--Electric bells, dynamos, motors
  3. Law of electromagnets

E. Heating effect of current
  1. The electric iron
     (a) Structure, how it heats, cost and operation
  2. Street car heating
     (a) Law of heating by current

F. Motors and dynamos
  1. Faraday's discovery
  2. Structure of motors and dynamos
  3. How they act and why .
  4. Adaptation of to certain work
  5. Use, cost, manipulation

IV. Light

A. Light sources
  1. Campfire, candle, kerosene lamp, gasoline lamp, electric lamp, acetylene plants
     (a) Advantages and disadvantages of each; requirements of a good light; measurement of candle power; cost and up-keep

B. Reflection of light
  1. Lamp shades and reflection
  2. Law of reflection
  3. Locomotive and automobile headlights

C. Illumination
1. Color of wall paper in relation to illumination
2. The angle law of illumination
3. The distance law of illunimation
4. Placing of light sources for best efficiency
5. Amount of light needed for different purposes

D. Color
1. Reasons for different colors in nature
2. The rainbow and its colors
3. Primary colors and complementary colors
4. Combinations of pure spectral colors
5. Combinations of pigments
6. Color blindness in individuals

V. Sound
A. If time will permit, some interesting things may be studied and discussed here. It is not as practical as the first four divisions, however.

Vocational Work-- The entire curriculum of this school is to articulate closely with the real life of the community. Three-eighths of the work, however, is distinctly vocational or bears so directly on the economic activities of our agricultural communities as to be designated by educators as vocational. These vocational courses consist of four years' study of home problems and activities and two years of agriculture for the girls and three years of construction work and three years of agriculture for the boys. Thus approximately three-eighths of the time of our pupils during the four years of this high school course is given to doing and to a careful study of the doing of the things of prime importance to the fathers and mothers of the community.

The importance of such work is so self evident as scarcely to need further justification. How can its omission be justified? It is psychological. Children are enthusiastic to do things, to make things throughout the early years of school life. By the age of eleven or twelve, their muscular development and control is such as to demand direction in useful work. Failure to develop interests and discover native abilities through the development of these instincts, means in the case of many a youth not only the death of the instincts but also an aversion to that sort of work throughout later life.

This work can be made as truly disciplinary as any that may be offered to youth at this age. It is serious work and can be made just as difficult as the ability of the pupil demands. The pupil can study something difficult and have it useful all at the same time. He can acquire good habits--become punctual, accurate, honest, and all the while be doing something useful.

Lastly, this work is truly cultural to all pupils. Which is more cultural, translating a paragraph of Caesar's Commentaries or making a cupboard, hotbed, or good loaf of bread? Learning of Greek Colonization of how to raise corn or kafir or to furnish a kitchen or bedroom? It is useless to multiply comparisons. Of all the work offered herein to early adolescents, this is the most cultural.

The course in elementary agriculture has already been mentioned. The others in this phase of the work will now be discussed.

<u>Construction Work for the Boys</u>-- This is a graded course of construction work extending through the seventh, eighth, and ninth grades. Classes should be small that the work may be largely individual. Construction and correlated drawing proceeds together and as the work proceeds from simple to complex, the various principles of construction can be mastered. Many things can be made of use in the different phases of school work, including many school room furnishings. Many articles, from a bread board to a hayrack, desired by the parents may be purchased at a price set to cover fully the cost of materials. Care of tools and accuracy and neatness of workmanship should be insisted on. However, remember the course is not to train carpenters, but to develop homemakers. It will arouse the interests of the boys, hold them effectively, and provide their development through work.

In the seventh grade should be elementary instructions in the care and use of tools and construction of simple articles, such as mail boxes, simple toolcases, sawhorses, and bench hooks. Correlated with this, should be the necessary elements of mechanical drawing, including relation of views, arrangement of views, and placing dimensions; also lettering. Make working drawings of the objects constructed. In the eighth grade continue making useful articles for use in home and school. Gradually master the more complex and difficult things. Correlate all construction and drawing. In the ninth grade the drawing will advance to and include plans and elevations for small buildings, such as poultry houses. Unusual opportunities are offered for correlation with the agriculture in this year's work; also for correlation with the work on the farm. A large variety of articles useful on the farm, in the farm house or in the school may be made. Useful cement construction should be a part of the work.

Professor Geo. E. Bray, Industrial Engineer of the Agricultural College Extension Division, has prepared the following suggestive outline for these three years of work in this school. It will not fail to be a worthy guide to an efficient teacher.

Seventh Grade

Mechanical Drawing-- A study of the purpose of working drawings. General directions for making drawings. Relation of views. Arrangement of views. Distance between views. Location of dimension lines. Placing dimensions and arrow heads.

Practice plates of letters and numerals drawn on a large scale.

Working drawings of familiar objects having straight edges, suitable for manual training work, such as--bench stops, sand paper blocks, bench hooks, mail boxes, feed hoppers, farm gates, etc. Working drawings of familiar objects having circular edges and curved lines, such as--wooden barrel covers, game boards, milk stools, cutting boards, etc. Scale drawing of school grounds and plan, front and side elevations of school building.

Woodwork-- Select one or more articles from each group.

I. For use in connection with woodworking at school or home--bench hooks, nail boxes, chiseling boards, sawhorses, tool cases.

II. For use in connection with primary manual training work at school--weaving boards, weaving needles, hammock mesh sticks, hammock needles.

III. For use in connection with domestic science work at school--cutting boards, moulding boards, shelves, stirring paddles, trays.

IV. For use in agriculture at school and home--
   A. For garden work--hotbeds, forcing boxes, vine screens, bird houses, measuring crates.
   B. For poultry work--trap nests, chicken coops, feed hoppers, brooder boxes, egg testers
   C. For general use--sawbucks, stepladders, wagon jacks, hammer handles, hatchet handles, eveners, singletrees, milk stools, fly traps, snow shovels, sleds, rabbit traps.

Eighth Grade

Mechanical Drawing-- Review principles of working drawings. Draw several practice plates of letters and figures. Make drawings involving tangents, irregular curves and section drawings of such articles as brackets, book racks, sleds, ets. Orthographic projections with sectional views of type solids such as prisms, pyramids, cylinders, cones, and spheres, etc. Drawings to convenient scale of home farm, showing locations of fields, pastures, fences, (creeks and railroad tracks, should there be any), woodlots, garden, farm buildings, etc. Principles of isometric projections in drawing familiar objects, such as saw horses, hotbeds, forcing boxes, trap nests. etc.

<u>Woodwork</u>-- Select a number of articles from each group.

I. Construction of equipment for woodworking at home-- Work bench, bench hook, saw horses, mallet, nail box tray, tool carrying case, miter box, plumb rule, turn saw frame, tool cabinet, grind stone frame, oil stone shelf.

II. Useful knots, bends and hitches--square knot, bowline knot, sheet bend, scaffold hitch, timber hitch, harness hitch, sheep shank bend, whipped end, rope halter, eye splice, short splice, long splice.

III. Application of mortise and tenon joints--drawing stand, tabouret, book rack, porch swing. (Special attention given to filing rip and cross cut saws.)

IV. Exercise in making matched, doweled and tongue and grooved joints with provision for shrinking and swelling of the lumber--drawing board, bread molding board.

V. Exercise in planing and fitting thin strips, also in boring to prevent splitting-- T-square. (Special attention given to sharpening auger bits.)

VI. Exercise in paneling--small cupboard, tool cabinet with paneled door, tool chest with paneled cover.

VII. Articles in cabinet construction with special emphasis placed on methods of finishing-- book shelf, magazine stand, foot stool, table, umbrella rack, writing desk. (Special attention given to the sharpening of cabinet scrapers.)

<u>Sewing and Cooking for the Girls</u>-- The special home work for the girls is provided to alternate in this small school so that but two courses are taught each year. Two years of work center about cooking and cooking problems and two about sewing and other common home problems more or less related thereto. A sufficiently distinct line can be drawn between these phases of home work to make alternation

practicable where the size of the combined classes make it advisable. So the seventh and eighth grades may be together and again the ninth and tenth grades and the work offered on years as heretofore scheduled.

The work should not be sewing and cooking only but cover all the common problems of housekeeping and management as far as time will permit. One fourth of the time or not less than eighty minutes each day for four years is given to this work and its importance justifies it. This time should be faithfully used, mostly in practical work, a little outside time being frequently given to study and reports.

The brief outlines which follow in these courses were prepared by Miss Bertha E. Buxton, teacher of the Domestic Art work in the School of Agriculture of this College, and Miss Alice E. Skinner, teacher of the Domestic Science work in the same school. Both of these young women are efficient, practical teachers of this elementary work, and their outlines can not fail to be a reliable guide to any young woman with preparation, initiative and ability enough to teach this work. The point of view in this work must not be misunderstood, and these outlines are further included with an intense desire to be clear on that point.

Elementary Sewing and Home Furnishing

I. Bag-- Ten stitches illustrated. Discuss color combinations. Insist on accuracy and neatness from the beginning.

II. Knife and Fork case-- Eight principles illustrated. Give lesson on care of silverware.

III. Stocking darn-- Care, cost, social aspects.

IV. Woolen darn-- Care and cleaning of woolen clothes. Textile lesson.

V. Buttonhole model.

VI. Sewing apron-- Placing of pattern, sewing on of lace and lace join. A discussion of desirable materials and appropriate laces for materials. Insist on girls doing their own shopping. Teach them how to buy.

VII. Hemmed patch-- Regular textile lesson on cotton. Full discussion of cotton materials.

VIII. Machine work introduced-- Lesson on care of the machine and demonstration lesson on its use.

IX. Cooking apron.

X. Nightgown-- Draft for the same. Discussion of materials suitable for undergarments;also suitable trimmings. Cost. Comparative lesson. Ready made garments compared to others.

XI. Christmas problem-- Shoe bag a good one. (Give it in the series at the appropriate time.) Have an exhibit at Christmas time. Let the mothers be invited in to sew with the girls a few times during the year. Give appropriate attention to the social side.

XII. Laundry lesson.

XIII. Bed room furnishing-- Each girl should plan her own bed room. Cost of furnishings. Kind desired or desirable. Hangings and wall paper. Complete discussion of color harmony in rooms. Illustrative drawings with samples of materials.

XIV. Living room furnishings-- Kind of pictures, etc. Be careful not to do this in a critical way.

XV. Corset cover-- Use patterns #32, #34, or #36 with alterations. Materials and trimmings suitable. Comparative lesson when garment is finished, as to cost, durability, neatness, etc., with factory made corset cover.

XVI. Drawers-- Drafting, straight rule, its use and adaptation. Materials discussed. Comparative lesson with factory made garments.

Sewing and Home Problems

I. Petticoat
   (a) Draft, straight rule
   (b) Materials suitable for a petticoat
   (c) Comparative lesson
      1. A chart of materials suitable for garments should be had by the teacher. Teach the girls how to buy.
      2. A lesson in buying should be given at an opportune time, also a lesson on the appropriate trimmings for different materials.

II. Tailored cotton or linen skirt
   (a) Drafting pattern, straight rule
   (b) Alteration of draft and discussion on the lines of the body. Skirts suitable for different figures.
   (c) Materials suitable for such a skirt and when and where it should be worn. Value of shrinking material.

III. Lingerie Waist
   (a) Drafting pattern, straight rule
   (b) Discussion of waists in vogue
   (c) Adaptation of pattern to styles
   (d) Materials suitable

IV. Plain woolen dress
   (a) Discussion of woolen material
   (b) Styles of dresses and adapting pattern used on former dress, to this dress
   (c) Trimming for woolen dresses, colors, etc.
   (d) Comparison of cost, material, styles, etc. with factory made garments.

V. Plain wash silk waist
   (a) Manufacture of silk
   (b) Discussion of different kinds, their durability and suitability for different occasions. This brought out by samples collected by the teacher.

(c) Making of simple waist suitable for a dress waist
(d) Comparison with factory made
(e) How to launder or clean silk

VI. Lingerie dress
(a) Selecting and using of commercial pattern
(b) A dainty wash dress for a dress up dress
(c) Comparison lesson

VII. Lesson on a girl's wardrobe
(a) Clothes necessary
(b) Styles to choose
(c) Care of dresses

VIII. Making of bows and sashes
(a) Making of flowers
(b) Bows for hats, girdles, etc.

IX. Embroidery and fancy work
(a) Different stitches used in embroidery. Their application to some Christmas problem at holiday time.

X. Cleaning lesson
(a) Cleaning of laces
(b) Cleaning of gloves
(c) Cleaning of feathers
(d) Removing stains and spots (Real laboratory work--not lecture work)

XI. Making over lesson
(a) Taking an old dress and making it over to fit the time.

XII. Care of children
(a) Appropriate clothing

Elementary Cookery

I. Stoves--Management and care of coal stoves and of such other stove or stoves as are commonly used in the community. Structure of oven.

II. Cooking utensils-- Kinds (materials and shapes). Wise choice on limited means. Care. Cleaning.

III. Cupboards and tables-- Finish of cupboard shelves. Care. Position in kitchen. Arrangement of utensils for accessibility. Materials on table tops. Height of working surface. Measures and equivalents. Stress need of accuracy in measuring.

IV. Boiling and freezing-- Reading of thermometer. Determination of boiling point of water; of salt or sugar solution. Effect of air pressure on boiling point. Temperature in double boiler. Value of this utensil. Construct simple substitute for double boiler. Effect of salt on freezing point. Use of different proportions of ice and salt in freezing mixtures. Construction of ice cream freezers. Construct simple substitute. Value of frozen desserts. Preparation of simple fruit ice and ice creams.

V. Beverages-- Uses of water in the body. Amount required daily. Necessityfor pure water supply. Common sources of contamination. Placing of wells. Purification of water. Preparation of common beverages such as tea, coffee, cocoa, etc. Effects of improper cooking. Methods of serving. Value in diet. Prices and grades. (As much as possible through the entire course let pupils assist in compiling orders for supplies and in actual marketing.)

VI. Sugar-- Manufacture. Kinds and prices. Making simple candies.

VII. Fruits-- General composition. Value in diet. Keeping qualities of various fruits. Storage and care in home. Various methods of attractive preparation and serving of all common fruits, fresh and dried. Study of paring knives. Comparative value of fresh and dried fruits.

VIII. Vegetables-- General composition. Value in diet. Storage. Care of vegetable cellar. Study ventilation, lighting and drainage of cellar. Preparation of vegetables in various ways. Urge plentiful use of all kinds.

IX. Starches and starchy sauces-- Manufacture of starch (illustrate with potato). Thickening qualities of starch and flour. Cause and prevention of lumps. Preparation and use of sauces in cream soups. scalloped and creamed vegetables, pudding sauces, etc. Use of stale bread for buttered crumbs and croutons. Preparation of simple starchy puddings.

X. Cereals-- General composition. Value in diet. General principles in manufacture of various breakfast foods on market and their relative value. Preparation of typical cereals. Variations in serving. Value of fireless cooker. Construct simple hay box cooker. Comparative value of bulk and package cereals.

XI. Fat-- Source. Use in body. Effect of high temperature. Frying. Sauteing. Pastry. Use of scrap fat in soap. Salad dressings.

XII. Eggs-- Composition. Value in diet. Thickening and leavening qualities. Best temperature for cooking. Use as meat substitutes. Tests for freshness. Methods of preservation and storage.

XIII. Milk-- Composition. Value in diet. Necessity for wholesome source. Care in home. Construction of simple cold box. Study construction and care of refrigerator. Use of milk in custards, etc. Pasteurization in home.

XIV. Cheese-- Composition. Value. Study of commercial preparation. Kinds on market. Best temperature for cooking. Preparation of various dishes. Emphasize value as meat substitute.

XV. Meat-- Composition. Study cuts of various animals. Relation of price to tenderness and nutritive value. Rigor mortis. Care in home. Emphasize wise use of cheaper cuts. Meaning of sanitary markets. Poultry and fish. Cleaning and dressing. Cold storage. Tests for freshness and age.

XVI. Flour mixtures-- Study of gluten and starch from flour and their behavior with heat. Various leavening agents and proportion of each to flour. Growth of yeast. Strong and weak flours. Long and short process bread. Care of bread in home. Sanitary bakeries. (Students will need much practice in manipulation of flour mixtures.)

Cookery and General Housekeeping

I. Study of yeasts, molds and bacteria. With magnifying glass study molds on bread, fruit, cheese, etc. Conditions necessary for growth. Methods of prevention and destruction. Study bacteria active in production of flavor, as in cheese, butter, etc.; decomposition of various foods, disintegration of dead organic matter. (Corelate with farm crops, dairying, etc.) If microscope is available, study of bacteria is easier. Media for experimental purposes may be purchased from reliable houses at small cost. Preservation of foods by drying, salting, sterilizing. Canning of fruits by open kettle, oven and steamer methods. Fruit jars. Canning vegetables. Preserving. Pickling. (Canned goods not needed for classes may readily be sold.) Factory canned goods. Pure food laws. Jelly making.

II. Disinfectants-- Heat. Light. Chemicals. Disposal of garbage. Disposal of sewage. Care of bathroom or outdoor closet. Types of outdoor closets.

III. Water systems-- Simple water systems for country house. Plumbing, materials, and prices. Care.

IV. Flies-- Habits. Methods of combating. Dangers.

V. Mosquitoes-- Habits. Combating. Dangers. Other household pests.

VI. Cleaning of each room of house.

VII. Care of floors and walls. Refinishing floors and furniture. (Practical problem in school floors and furniture.)

VIII. Care of sick room-- Study of beds and bedding. Making of beds with and without patient in bed. Giving baths. Registration of pulse, breathing and temperature. Cleaning room. Disposal and disinfection of wastes. Preparation of invalid's tray.

IX. Planning, preparing and serving meals-- Inexpensive. Well balanced. Planning three meals per day at fixed cost, using current prices. Emphasize value of planning meals some days in advance. Prepare and serve one meal each day in class; emphasize family service with correct but simple laying of table and good table etiquette. Teach students to act as host and hostess. Parents may be invited as guests. If conditions warrant, a few lessons on formal service may be included.

X. Lunches-- School lunches for children. Kinds of foods adapted. Preparation. Packing. Lunches for laborer.

<u>Agriculture (Ninth grade)</u>-- This subject is taught to both boys and girls in the ninth grade. Its cultural value alone, to citizens of Kansas would justify this requirement. The work is based upon the elementary work given in either the seventh or eighth grade. In the study of farm crops, considerable emphasis will be given to the fundamentals of plant growth and the practical phases of botany that furnish explanation for the phenomena. For example, the seed and the growth of the plant from the embryo; the general structure and function of root, stem and leaf; relation of the air to food manufacture; absorption from the soil by plants; utilization of food in the plant and general elementary plant physiology. The work may well be concerned chiefly with the crops of economic importance in the community. Some attention should be given to soils and soil management as one of the fundamentals in crop production. The most serious crop pests, such as chinch bug and Hessian fly, should be studied together with methods of combating them.

The last half of the year is to be divided into three parts and about six weeks devoted to poultry, six to farm dairying, and six to gardening. This should be varied somewhat, however, according to the interests of the community. Emphasize that which is of greatest importance to the patrons.

At least two eighty-minute periods a week should be devoted to laboratory or field trips. If possible, arrange this work for the second or fourth quarters of the day as as to permit a little running over of time occasionally. Further methods will be mentioned later.

Agriculture (Tenth Grade)-- This will be a small class and the advanced work in agriculture in the school and along with regular assignments and work herein outlined, ~~for~~ the boys should help solve the problems of the community. Through this class considerable school extension work should be done in the community. Spend at least two evenings a month with this class and the farmers of the community helping to solve their problems. This is only a suggestion. The live teacher will find a way to "project" this work into the farm. The boys in this class have had good foundation training in construction work and this year's agriculture should be made the most practical sort. Three eighty minute periods a week will be spent in laboratory work or field trips. The content of the year's work will be varied according to the interests of the community. Generally, however, one-half of the time may be well devoted to live stock, emphasizing feeding and management, and the other half given to farm management and accounts. Should horticultural interests be especially important in the community, a few weeks should be set apart for a study of that phase of the work.

Enrollment for Three Teachers

This wide range of practical work can be handled by three carefully selected teachers. About fifty pupils, however, would secure the maximum efficiency for the school--that is, the teachers would be working to their best advantage with forty to fifty pupils. It is probably safe to set as a standard that, should the enrollment go beyond sixty, another teacher should be provided. In order to make this organization clearer to farmers and school boards, I have included a suggestive daily program for the three teachers.

Suggestive Daily Program

Time	Agriculturist	Home Economist	English Teacher
9:00 to 10:30	7th & 8th Grades Drawing and Construction*	7th & 8th Grades Cooking or Sewing	9th Gr. English 10th Gr. English
10:30 to 12:00	9th Gr. Agric.	10th Grade History &Citizen-ship	7th Gr. Reading
	9th Gr. Math. M W & F : $\frac{1}{4}$ day T & T	10th Grade Physics or Civics	8th Gr. Classics Gram. & Composition
1:00 to 2:30	9th Gr. Drawing and Gen'l Construct'n	9th & 10th Grades Cookery & General Housekeeping or Sewing and Home Problems	7th & 8th Grades Hist. or Arith. 7th Grade Gram. & Comp.
2:30 to 4:00	10th Gr. Agric. $\frac{1}{4}$ day M W & F : 9th Gr. Math. T & T	Continuation work in the community or 1 or 2 subjects in 7th & 8th grades	8th Gr. Hygiene or Kansas History 7th & 8th Grades Elem. Agric. or Geog. $\frac{1}{2}$yr.&Civics $\frac{1}{2}$yr.

*These are two classes, but, as said before, they are doing mostly individual work and in the small school this teacher will have no difficulty in conducting the work as here provided.

It is not intended that the entire 40 - 45 minutes shall always be given to these academic recitations in the 7th and 8th grades. Twenty to thirty minutes may often be given to the recitations and the rest of the period to individual assistance in study.

A Few Examples

A questionaire was recently sent to a number of small Kansas schools asking the principals for their enrollment in the various grades. Practically every one answered promptly and much of the information is tabulated below.

Location of school	Enrollment in Grades							Total Number Teachers
	7&8	9	10	11	12	1-6	Above 6th	
Corbin	10	2	2			50	14	3
Anson (Consolidated)	13	5				48	18	3
Otego	8	6	5	4		45	23	3
Bucyrus	8	11	6	2		56	27	3
Ionia	15	10	4			72	29	3
Ford	21	13	6	9		79	49	3
Fontana	20	19	3			77	42	4
Riley	21	20	9	8	1	62	59	4
Leonardville	25	12	13	7	7	70	64	4
Lovewell (Twp. H. S.)		20	2	3	8		33	2
South Haven (Consolidated)	32	10	4	4		90	50	5
Milton (Consolidated)	24	8	8	7	7	60	54	5
Esbon	24	16	9	6	6	70	61	5
Randall	24	14	10	12	9	83	69	5
Lecompton	29	15	7	10	6	110	67	6

Establishing the Schools

A New Line of Development-- The above list of schools is undoubtedly quite representative of Kansas agricultural communities. When a district employs as many as four teachers we find it aspiring to and generally soon offering four years of traditional high school work. Why not just such a school as this offer school work planned in the interests of the many? Why not add one or two teachers to the three or four already employed and thus with one or two teachers for the first six grades and three for the seventh, eighth, ninth and tenth, have a school the value of which to the community can hardly be compared with the old type of school? Where more than four teachers are already employed the problem of establishing the new school becomes simpler, for the attendance in the upper grades is such or will become such as to require four or five teachers in the high school; say four teachers for an enrollment of seventy and five for an enrollment of ninety. With five high school teachers, moreover, the course could be extended and six years of high school work offered. The field of this bulletin, however, is primarily the three-teacher school.

The tendency of the small school is to aspire to do more than it can do well, copy some things from city schools and lengthen its course at the expense of adaptability and efficiency. I say "adaptability" advisedly, for the work offered has the cityward tendency and is really worth while only for those who may some day enter college or the professions. Better far offer ten years of work of greatest value to the largest number in the community than to offer twelve years such as is offered in scores of small Kansas schools.

If the attendance in grades three, four, five, and six of a school is fifty, then the attendance in the next four grades should also be fifty. ('Twill frequently be more because of tuition or outside pupils.) If the attendance in the upper grades is low, is the school to blame or the pupils? We have too frequently blamed the pupils and their parents. Let us recognize that thousands have been partaking of a menu undigestible and absolutely unserviceable to them, and then change our menu in education to meet the needs of the youth.

Equipment-- The cost of the equipment of this school need not be exorbitant. More room must be provided than most small schools now have. Our school of fifty should have first a good room seated with fifty desks for assembly and study purposes. Adjoining this or as a part of this partitioned off (separated by a partition with glass sections so arranged that supervision of the two rooms by one teacher would be easy) could well be a small library and recitation room. Further, two good, fair to large sized and well lighted laboratories are absolutely essential, one for the work of the Home Economist, the other for that of the Agriculturist. The furnishings may be the minimum at first, yet nothing but durable, satisfactory equipment should be supplied as far as possible. Much of the incidental and very desirable furnishings may be made later in the construction department. A small greenhouse (can often be made as a leanto from a south basement) is highly desirable. It should be heated by an independent steam or hot water heating system. It can be made ready for operation for from $250 to $400 and would be of great service to the grades as well as the high school. (The school farm will be mentioned later.) High priced machinery and apparatus is unnecessary. The following is a reasonable estimate for the initial outlay:

For construction work for class of 12, (Benches and tools)	$150 to $250
For sewing and cooking, class of 12, (Tables, range, utensils, 3 sewing machines)	$250 to $350
For agriculture, including library,	$100 to $150
Totals,	$500 to $750

<u>Text Books and Library</u>-- Very few text books have been suggested. In some cases this is because suitable

texts are not available at the present time. In others, it is because this point of view in education is so much alive to-day that better texts than those that could now be suggested may be off the press any day. That there is no text that exactly meets the needs of a certain course is no argument against the course. For the library many invaluable national and state bulletins are available free or at a nominal cost. These should be arranged systematically and cared for so they may be used for years. The following is a list of about fifty dollars' worth of books that should be found in the library. The publishers are given to make the list usable.

No.	Publisher	Address
1	Rand, McNally & Company - - - - - - - - -	Chicago
2	The Macmillan Company - - - - - - - - - -	"
3	Orange Judd Company - - - - - - - - - - -	New York
4	Webb Publishing Company - - - - - - - - -	St. Paul
5	The University of Chicago Press - - - -	Chicago
6	The Breeder's Gazette - - - - - - - - - -	"
7	Ginn & Company - - - - - - - - - - - - - -	"
8	J. B. Lippincott Company - - - - - - - -	Philadelphia
9	Lea & Febiger - - - - - - - - - - - - - - -	"
10	Lyons & Carnahan - - - - - - - - - - - - -	Chicago
11	McGraw-Hill Book Company - - - - - - - -	New York
12	Manual Arts Press - - - - - - - - - - - - -	Peoria

Book	Publishing House
"Poultry Production", W. A. Lippincott	9
"Laboratory Manual of Agriculture", Call & Schafer	2
"Beginnings of Agriculture", Mann	2
"Soils and Crops", Hunt & Burkett	2
"Field Crop Production", Geo. Livingston	2
"Forage Plants and Their Culture", C. V. Piper	3
"Soil Management", King	3
"Farm Manures", C. E. Thorne	3
"First Principles of Soil Fertility", Vivian	3
"Dry Farming", Widtsoe	2

Book	Publishing House
"The Book of Corn", Myrick	3
"Forage and Fiber Crops in America", Hunt	3
"Field Crops", Wilson & Warburton	4
"Chapters in Rural Progress", Butterfield	5
"Soils and Fertilizers", Snyder	2
"Soils and Soil Fertility", Whitson & Walster	4
"Farm Grasses in the U. S.", Spillman	3
"Manual of Corn Judging", Shamel	3
"Farm Management", Andrew Boss	10
"Farm Management", Warren	2
"Vocational Guidance", J. Adams Puffer	1
"Popular Fruit Growing", Green	4
"Vegetable Gardening", Green	4
"The Pruning-Book", Bailey	2
"The Feeding of Animals", Jordan	2
"Beginnings of Animal Husbandry", Plumb	4
"First Principles of Feeding Farm Animals",Burkett	3
"The Farm Dairy", H. B. Gurler	6
"Productive Orcharding", F. S. Sears	8
"Agricultural Engineering", Davidson	4
"Animal Husbandry for Schools", M.W. Harper	2
"The New Agriculture", H. J. Waters	7
"Concrete Construction for Rural Communities", R. A. Seaton (In preparation)	11
"Farm Motors", A. A. Potter	11
"Manual Training for Common Schools", E. G. Allen	12
"Handwork in Wood", Wm. Noyes	12
"Handy Farm Devices and How To Make Them",Cableigh	12

State Aid-- Everyone who knows the means of support of Kansas schools admits they need some readjustments. One of the means of a more just distribution of the burdens is undoubtedly larger units of taxation. I believe a majority of the support should come from a unit larger than the local district, but that the final levy, "the cap sheaf", should always be left to the local district. Such schools as herein provided are entirely worthy of complete support by the local district if necessary, but the state could not do better than encourage them and thus encourage useful standards by wise and adequate assistance. The assistance given must be on the principle that good work in any line should receive the proper recognition. Then, following precedents in our own state, as well as others, why should not our state pay $300 per year on the salary of each of the vocational specialists herein provided. Or pay one-third of the salary of each. The school offering six years of high school work could be allowed the same proportion of the salaries of three or more of their vocational teachers as justice demanded. Another excellent provision and one worthy of encouragement on the part of the state would be to pay a part, say equal parts with the local district up to $375 on the initial outlay for equipment for this vocational work. This state aid should all be conditioned on the meeting of certain definite high standards.

In the matter of financial readjustment the State of Kansas could well go further and make provision for material county aid to her public schools.

<u>Teachers</u>-- The election of a poor teacher is always a most serious proposition, especially in the small school. Good teachers are absolutely necessary for the success of this school. The field is new and we must not only have well prepared teachers but those with initiative and thoroughly in harmony with the country point of view.

The three teachers have been designated as the agriculturist, the home economist and the English teacher because these phases of the work are of prime importance and are those about which all our work is to concentrate. They are the strong points to be desired first of all.

The agriculturist will usually hold the key to the situation. He will probably be principal of the school and must be capable of leading the general development of the community. He must be a master of real farm work and make the students realize that they are dealing with and handling real farm problems. To handle this work successfully in our three-teacher school the agriculturist must be master of the elements on the mechanical side of farm work.

No apology is here made for presenting a satisfactory school preparation for this teacher, based entirely on work offered at the State Agricultural College, for the immediate future is going to find real agriculturists in our schools and there is one place for their adequate preparation and that is the agricultural division of this college.

Our agriculturist should be a graduate of a broad (not highly specialized) course in the division of agriculture. He should have included in his course electives from mechanic arts to a minimum of thirty-five credits as the courses are now offered. This is two-thirds of a year or three summer terms of work. These essential courses are as follows:

1. Mechanical drawing, three terms, three credits each term. These courses constitute a graded course in mechanical drawing beginning with the elements and with no prerequisites in descriptive geometry or geometrical drawing. They will include training in the drawing of all such articles as those constructed in the practical high school, and in the making and reading of quite complex blue prints.

2. A new course designated "Farm Architecture", four credits, will be very desirable and meets a need in this work. It includes the preparation of drawings and specifications for barns, dairy stables and other farm buildings.

3. Concrete construction, three credits. This course will provide preparation for making the large amount of ordinary concrete work found on the modern farm.

4. Electricity, three credits, and gas engines, three credits, are each courses which will provide practice in handling practical, twentieth century farm problems.

5. Woodwork, six credits are absolutely necessary -- Course III-G in the catalogue, 1913-1914. In addition to this the course designated as "Advanced Woodwork", three credits, would be very desirable.

6. Blacksmithing, five credits, courses I and II in the catalogue, 1913-1914, should be the minimum.

All these courses are now offered as "Agricultural Electives" in this college though part of them will be catalogued for the first time in the catalogue of 1914-1915. In addition to these our agriculturist should take a minimum of professional work, that required for the state certificate. This amount of preparation is not unreasonable. It can be done in the four years of college work, or in four years and one or two summer terms at the farthest. And it will be done by enterprising farmers' sons as soon as the school patrons of the state demand it.

The supply of teachers for the positions of home economist and English teacher is adequate. Care must be taken, however, to get the best. Both must be teachers of initiative and in full sympathy with country life and with the point of view of this practical high school.

To provide adequately for the work in agriculture the agriculturist should be employed for the entire year or at least for eleven months out of the twelve. His work with the farmers, supervision of the home projects of the pupils and collection and assortment of materials for winter's class work, require his faithful efforts much longer than the regular nine months of the year devoted to class work. It will require at least $1100 a year to secure a man capable of doing this work and his salary must advance as he proves his efficiency. Teachers for the other positions may be secured for from $70 to $100 per school month.

<u>The Four-Teacher School</u>-- With four teachers usually the fifth high school year (11th grade) could be added.

Suggestive Assignment.

Principal -- Agriculture and Science
Assistant -- Construction, Mathematics, and Athletics
Assistant -- Home Economics and History
Assistant -- English and Music

Eleventh Grade Work.

1. English-- Much time should be given to oral English. Considerable work may be done in public speaking and debate. The work should include sufficient review of commercial forms and business letters to establish familiarity with all common forms.

2. Elementary Chemistry-- Many practical applications can be made the last half of the year, such as those in relation to foods, soils and fertilizers, and dairy products.

Select any two of the following:

3. Blacksmithing and Farm Machinery.

4. Bookkeeping one-half year.
   Physiology, Hygiene, and Rural Sanitation one-half year.

5. Ancient History) Given on alternate years.
   Mediaeval and Modern History)

6. Algebra.

7. Latin.

The Five-Teacher School-- With five teachers and an enrollment of not to exceed ninety, full six years of high school work could be offered. It is possible also that the work could include a rural teachers' training course.

Twelfth Grade Work.

Select any four of the following:

1. English. -- Brief history of literature and classic study.

2. Domestic Science and Art. -- A year's advanced high school work in housekeeping problems. May include some methods of teaching in rural schools. Some practical work in cooking problems most needed by the class. The course should include two months' work in dressmaking and two months' work in millinery.

3. Advanced High School Agriculture.
   (a) Soil Management and fertility, one-half year.
   (b) Care and production of live stock, one-half year.

4. Rural Economics and Rural Law

5. Geometry.

6. Latin - Caesar.

7. Psychology, one-half year.
   Rural School Methods and Management, one-half year.

8. Common School Reviews.

The entire course is based upon the principle that useful, practical work, based on the economic activities of the community, should form the foundation of the secondary school course; and that the pupils should begin this work at twelve or thirteen years of age. This will look first to the needs of the great majority and at the same time do no injustice to the small minority who will some day reach the graduate school of the college. Valuable informational and cultural courses are offered in the eleventh and twelfth grades as conditions permit. Some of these may be specifically intended to prepare for certain lines of work in higher educational institutions.

<u>County High Schools</u>-- This course presents the logical line of growth for county high schools, and it is a line along which a few of our county high schools are making fair progress. Let the administrators look well to the interests of their counties and the change in this

direction will be far more rapid. It is the business of the county high school to best serve the entire county. If the communities of the county can do ten years of work then let the high school especially emphasize the eleventh and twelfth years. If certain communities of the county can offer only six years of work well done then let the high school accept the product at that point. Undoubtedly our western county high schools should for years to come emphasize such a six years', practical high school course as herein presented and suggested, while the county high schools in our more populous and wealthier counties should give special attention to the eleventh and twelfth years, expecting local communities, -- cities, townships and consolidated districts to supply the first ten years of work such as the interests of their respective communities justified. Certainly no county high school should be without a greenhouse and a small farm plot on which a few carefully selected demonstrations should be carried out, nor should any county high school fail to have a good agriculturist employed for twelve months of the year. If the agricultural interests are the most important in the county the school should show it.

Township High Schools-- Our State Superintendent in his "Eighteenth Biennial Report" says, "For the boy and girl in the country I know of no plan that promises so much as the township high school". This is certainly true in many sections of Kansas, but the township high school course should be first of all such a four years of work (7th, 8th, 9th and 10th grades) as herein outlined. Let the township high school accept the seventh and eighth grades from the elementary schools of the township. By so doing it will relieve the elementary schools and give them better opportunity to do justice to the first six years of work and provide a more adequate instruction for the seventh and eighth grades. By such a plan it may minimize retardation, get all the pupils of the township into the high school, and carry them through at least ten years of useful school work. In the wealthier townships, especially in counties without county high schools, the eleventh and twelfth years of work may be provided. Far better, however, as said before, give four years of good, practical work, than six years where quality and practicability are sacrificed to extend the course.

Consolidated Schools -- Consolidation also promises much to the country boy and girl. Our elementary course may be reorganized, revitalized, redirected, but after all is said it is absolutely impossible in the one-teacher, country, elementary school to meet the demands of the progressive farmer of Kansas, who asks that the educational opportunities of the country boy be made equivalent to those of the city boy. This can be secured only by first providing a community, in the agricultural as well as the city district, and a high school adapted to the interests and built up around the life activities of that community. Consolidation promises much in establishing these community centers, where suitable high schools, as herein described can be provided. Let our consolidated schools vitalize their course of study. Let them become the real centers of the social and economic activities of their respective districts and my prophecy is they will take on a new popularity and many new consolidated districts will be formed over the state of Kansas.

Barnes High Schools -- The readjustments needed under the Barnes law must not be here discussed in full. One point alone is to be mentioned. Had a different course of study been prescribed, or the college preparatory course not set up as a first requirement, the present opposition to the law might have been averted. As it was little schools sought to avail themselves of the advantages of the law and the one thing that loomed before them as the requisite was the traditional high school course -- the college preparatory course. No advantage could be received till the whole four years of that particular course could be offered. No wonder that the farmer felt that he was being "forced" to pay for a high school, when the high school was modeled after the traditional city high school, and such a high school with its cityward tendency was the very thing he did not want. But, says one, the general course was also provided. So it was, yet so unorganized that little more than nothing fulfilled its requirements, so much overshadowed by the college preparatory course, that in the practical everyyear workings of the law as we have had it, the general course meant very little in small Barnes high schools. State aid for vocational work has had a tendency during the last four years to overcome the difficulty, but it hasn't struck deep enough. Give these schools an opportunity to obtain the advantages of the Barnes law on offering such a course as herein provided. Make the so-called general or practical course, practical and adequate and let it be provided first and financially rewarded and the lawmaker will have reached one of the needed readjustments in the Barnes law.

Superiority of These Schools.

The People's College -- The high school, "The People's College,"has often been thrown out as a slogan. So the high school should be, but it will be only when it is properly redirected and finds its basis in the vital life vocations of its community. Successful agriculture requires a better education and a broader education than that of any other vocation outside of the professions. But agricultural enterprises are the most available for educational purposes. Provide the education with the proper breadth, with basis in the rich content at hand and its superiority will make itself known in the prosperity and progress of the communities concerned.

No Day Dream -- The suggestions of this bulletin are no day dream. They are the results of experience and conviction and the study and comparison of scores of agricultural schools recently established in this country -- schools in Vermont, Massachusetts, Pennsylvania, Virginia, Tennessee, Mississippi, Minnesota, Wisconsin, California, Washington and other states. In some of our northern and some of our southern states they are dotting the counties of the map. Knox County, Tennessee, has five agricultural schools; Hamilton County six of them. There is not a phase of the work here suggested that has not been successfully tried out. My work has been one of adaptation to Kansas conditions and an attempt to present a school, which measured by its returns will be the best investment a community can make, and to present it in its true light to school boards and teachers and patrons in agricultural Kansas.

In our country the idea of a practical high school for an agricultural community first crystallized into an institution in 1888 in the organization of a School of Agriculture at St. Anthony Park, Minn. The idea grew slowly until the last decade during which time it has spread and is still spreading with remarkably increasing rapidity. Hundreds of agricultural schools now exist in agricultural communities, and it is safe to estimate that seventy-five to ninety per cent. of them have been formed or entirely reorganized during the last five years. The national government has considered and is encouraging the movement, states are active and are lending their aid toward the establishment of proper standards and communities by the thousands are interested.

This is but the agricultural phase of the demand for vocational education, the most vital educational problem of recent years. Home keeping is the greatest business on earth and engages the loving service of almost ninety per cent. of Kansas women. Farming is the next greatest occupation. It directly engages the untiring service of one-half of Kansas men and indirectly most vitally concerns more than half of the other half. The future success of Kansas depends on how faithfully and efficiently her children follow and advance her agricultural interests.

The success of country life and country interests is the success and advancement of the state. Can a school then, exalting and advancing the vital interests of a state, at the same time developing initiative, self-control, love of work and service, love and understanding of nature and reverence for its Creator, fail to prove its superiority?

Community Service -- The fact that this school must be projected into the farm must not be overlooked. It should do a real community service and be the center of the real life of the community. Teachers of the traditional school are usually not fitted for community service in the first place, and secondly, the school board and superintendent felt it their duty to see that they had sufficient book work and paper grading on hand all the time to keep them from even a knowledge of the community's interests. The vocational specialists of this school will be expected to do community work. It will be as much provided for as any class room instruction. In the larger schools the school farm will provide some very useful demonstration plots and be an excellent means of interesting the community in the phases of agriculture of most economic importance to them. A few well planned and supervised projects should always be carried on with the agricultural students, such as raising an acre of pure bred corn, a patch of potatoes or melons, vegetable garden, field of alfalfa, or the raising of calves, pigs or chickens. Besides these projects carried on by the pupils with the consent of their parents and the supervision of the agriculturist, there will be interesting meetings and discussions with the farmers of the community who will learn to look to our agriculturist for advice and up-to-date information along lines desired.

A reasonable school credit may be given for some of this project work in the regular courses. Articles constructed in the home work shop or made on the home farm may also be evidence for proper school credit for their makers. Work honestly and conscientiously done and up to standard in initiative and skill shall receive proper recognition, is our motto.

Nearly every community will have a dozen or more of girls out of school, wives, and mothers who will be anxious to meet regularly for a course of work related to their home problems. Often (and as provided in the suggestive program) the last quarter of the school day for one or two days a week may be given over to this work. It is unnecessary to present further possibilities for there are many of them and the home economist with initiative will not fail to find them if she is expected to do this sort of service and her work so arranged that she has the opportunity.

Another field of service must not be overlooked. It is the proper articulation of our agricultural commonity with the national and state experiment stations and the State Agricultural College. The utilization of the valuable results of these institutions often comes about slowly. Our vocational specialists would be on the alert and in close touch with all current developments. The wide and varied experiments of the college determine a few of the best crops and best methods of cultivation, a few of the best animals, best feeds, methods of care, etc., a few of the best methods of handling soils, -- the high school will begin with these results and from the few determine the very best for its community. Thoroughly scientific and practical knowledge would thus be quickly disseminated in the high school community and the returns from the investment in these other institutions be greatly increased as local communities were able to make an adequate use of them.

<u>The Natural Order of Development</u> -- A large majority of our children are motor minded, a minority only are book minded. The development of the child must consider the organs of action, -- the hands, the feet, the tongue and vocal chords. The adolescent child is an individual. He begins to think for himself and rebels if he is not understood. Is it any wonder then that he rebels when in the

traditional work of the upper or grammar grades the attempts to educate him deal with the special senses alone and in most cases the serious use of only one of them? Put the hands to construction work, direct the feet and the whole self in natural expression through plays and games and give the vocal organs abundant opportunity for oral expression and you are following nature's order of development and your results will be superior to the old exclusive "book learning" type of procedure. This principle applies from the kindergarten to the graduate school of the university.

The presentation of the practical side of sciences first and thus postponing the study of pure science till the eleventh or twelfth school years or even to the college years is psychological. The early adolescent needs his interests and experiences broadened. He will learn any science with interest and enthusiasm first by becoming familiar with that science in its applied forms. The traditional high school approach of science from the logical point of view, and science for science's sake, kills interest and stifles enthusiasm with nine-tenths of American boys and girls. G. Stanley Hall says, "Contrary to the common educational theory and practice, the practical, technological side of science should precede its purer forms." Paul Hanus says, "The secondary school should especially promote the discovery and development of each pupil's dominant interests and powers; and further, it should seek to render these interests and powers subservient to life's serious purposes."

These principles of development this practical course of study seeks to apply. Let them be applied and the results will be superior to those of the traditional high school course.

<u>Teacher Training</u> -- However rapidly the number of our one-teacher schools may be reduced they will continue to remain an important factor in the Kansas educational system for the years of the immediate future and the reorganization and revitalization of their work and provision for well-prepared teachers for them are matters of greatest importance. Steps are being taken to secure high school graduates for teachers of these schools. This is not enough. Many graduates of the traditional high school make the poorest rural school teachers. They know enough book knowledge but their practical knowledge is painfully lacking and they are not in sympathy with the practical point of view nor with country life. This practical high school would take a pupil up to the eleventh school year with the best possible early training for rural school teaching. Let the eleventh and twelfth

years then be modified to make a rural teacher training course somewhat like our present normal training course for high schools and we would have a course that should provide the rank and file of the rural teachers and they would be far better prepared than they are to-day. Some of the work in home sciences, construction and agriculture, proper redirecting of and emphasis on academic essentials, and the community center idea of this practical school (the closer relationship among the homes of the district and between the homes and the school), are the keys of new life for a one-teacher school. By the preparation of teachers then our more favorably situated agricultural communities may be the means of revitalizing, to some extent, even the least favored ones.

<u>The Best Training Possible</u> -- It is my first conviction that such a course of study as herein presented for the first ten years of the school life of students in agricultural Kansas not only presents an adequate training for life's activities and duties, and possibly the best that a small community could offer, that it not only presents the best possible line of development for our children up to the age of fifteen or sixteen, providing their school life must be terminated at that point, but that if it has such merits, it is also to the eleventh year of school life the best college preparatory course that could be provided.

Graduates from the tenth grade as herein provided, should be accepted in any high school in the state and told to make eight additional units of credit, avoiding duplications as far as possible, and the diploma of that high school would be earned. Colleges should, and they are rapidly coming to accept the point of view, help the high schools work out their problems for their own individual communities and accept the graduates from the twelfth grade as they find them. They might recommend certain preparatory courses as desirable for certain lines of work, but further entrance requirements than such as mathematics for engineers and English for all, should not be made. There is no justification in many of their entrance requirements to-day.

Our communities will be greatly benefited by this movement; standards of thought and action will be elevated; the service of the colleges will be enhanced because they will serve a larger constituency and become more democratic. The end of life is noble achievement. The changes herein presented are offered with the firm belief that they lead in that direction.