



THE KANSAS AGRICULTURAL STUDENT

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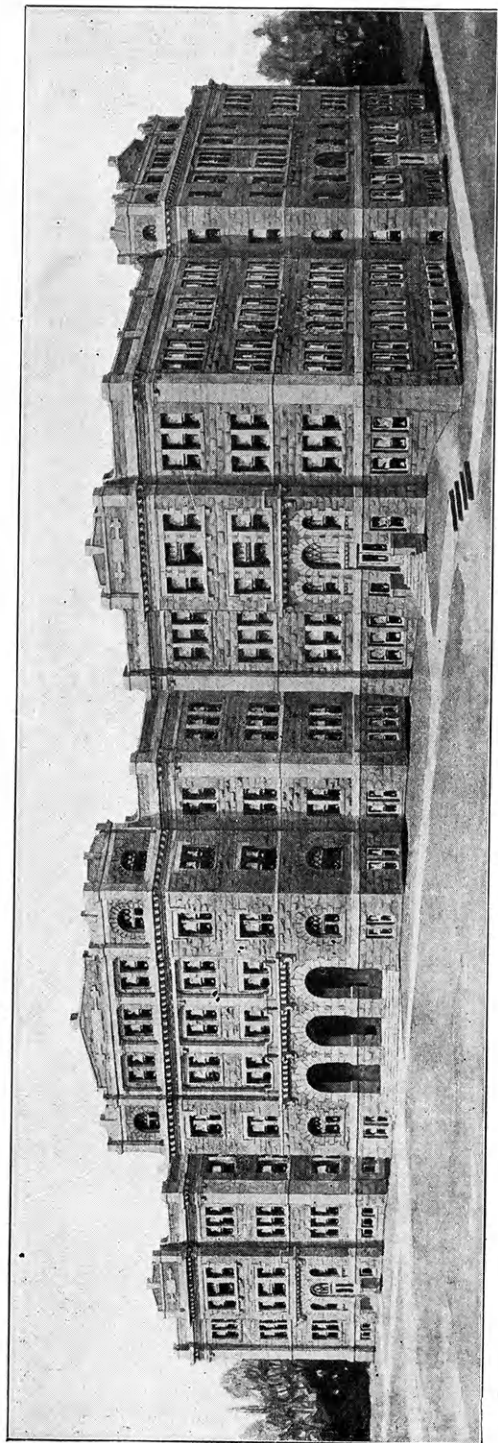
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CONTENTS

	Page
Agricultural Conditions in Serbia.....	3
Sylvester J. Coe, '22	
Coming Kansas Stockmen	5
J. Wheeler Barger, '22	
Our Dairy Judging Teams Are Winners.....	6
S. L. Copeland, '22	
A Tribute	7
Carson B. Roberts, '22	
Selection as a Method of Improving Self-fertilized Plants	8
B. B. Bayles, '22	
Pilots of the Show Ring	10
J. Wheeler Barger, '22	
The Agricultural Association	10
E. H. Coles, '22	
The Need for a Seed-control Law in Kansas.....	11
D. D. Brown, '22	
Matchless Dale	12
J. Wheeler Barger, '22	
The Agronomy Farm	13
E. S. Lyons, '21	
Farm Storage Problems in Marketing Kansas Wheat	14
H. I. Richards, '22	
Editorial	16
The Silver Lining	17
Carson B. Roberts, '22	
Principles That Should Govern the Planting of Forest Trees	19
Albert Dickens, '93	
Beef Production in South Africa.....	20
J. F. T. Mostert, '23	
The College Colts	21
J. J. Moxley, '22	
Cost of Production Studies	23
H. I. Richards, '22	
The Kansas Boys' Stock-judging Team	25
Arnold Englund, '22	
Agricultural Alumni Notes	26
E. H. Walker, '22	
Department of Milling Industry	27
Ray E. Kellogg, '22	
The Ag Fair	28
C. M. Wilhoite, '22	
The Stock Judging Team	30
Junius W. Farmer, '23	
The Greenhouses	32
J. T. Quinn, '22	





WATERS HALL

The above picture represents Waters Hall as it will look when completed. Only the east wing and the stock judging pavilion (not shown in the picture) have been erected, but work on the west wing will be started next spring. The east wing is 80 by 169 feet, with basement, three stories, and sub-basement, which is used for storage space. This section of the building houses at the present time the offices of the Dean of the Division of Agriculture and five of the departments. Besides these offices, the wing contains recitation rooms, a complete flour mill, and laboratories used in the study of soils, crops, and farm management.

An appropriation of \$275,000 was made by the last legislature for the erection of the west wing. Of this, \$140,000 is to be used during the present fiscal year (July 1, 1921 to June 30, 1922), and \$135,000 the following fiscal year. When the building is completed the two wings will be connected by the central structure, 130 by 80 feet, having a basement and three stories. Offices, class rooms, and laboratories for both the Division of Agriculture and Agricultural Experiment Station, and an auditorium for divisional and other agricultural meetings are included in the plans.

The work of the departments of the Division of Agriculture has been handicapped for shortage of room. The Department of Dairy Husbandry, which has long been inadequately provided for, will be moved into the new west wing of the building, as well as the rapidly growing Department of Agricultural Economics. Laboratories for the use of classes in Poultry Husbandry and an adequate meats laboratory for the Department of Animal Husbandry will also be located in the new structure.

The Kansas Agricultural Student

VOL. I.

Manhattan, Kansas, December, 1921

No. 1

Agricultural Conditions in Serbia

Sylvester J. Coe, '22

If Alexander the Great should come to life in this twentieth century and journey through the villages of the interior of Serbia as he did of old, he would not find the life of the peasants particularly strange. The agricultural life, in fact, would be going on about the same and, if he kept away from the larger cities and avoided talking politics, it might be some time before he found out that nearly 2,500 years had passed since his previous journey. To be sure, he would find the Macedonian roads, bridges, and temples somewhat fallen into decay and would miss the former law and order, but still things would be about the same. To a citizen of the United States, where each of the last decades has seen almost revolutionary progress in the implements of work and ways of living, such a statement as the foregoing seems almost incredible. It is, however, true in the western part of the central section, are concerned. The influence of Rome and ancient Greece has passed away, the Ottomans have conquered the land and misruled it, but still the peasant scratches the earth with a wooden plow and cuts the grain with a sickle as has been the custom for generations.

With an area no larger than the state of Maine, and a population smaller than that of the city of New York, the little Kingdom of Serbia has played a role in the recent past, the full magnitude of which cannot be reckoned until the end of time.

The country is rugged and mountainous, and the people fit in with the landscape. Of meats, mutton is the chief food, and it is said that Serbia raises more sheep per capita than any other country in the world. The

goats are an important source of milk but otherwise just goats, and smell much the same in Serbia as in America. The water buffaloes are fierce, wild-looking creatures, resembling the Zebu of India. As a matter of fact, they seem docile enough, and thrive even where little water is found. They are more powerful than the native oxen and probably are the most valuable draft animal of the country. Hog production is second to the sheep industry. The majority of the hogs are of the lard type, very similar in color and type to the Poland China of America. Corn is used extensively for fattening for market. The price is good, due to the heavy export to the surrounding countries. Poultry and its products are quite an important industry; chickens are of a mongrel blood although they seem to be good layers; ducks are similar to our Indian Runner and Pekin breeds; and geese and turkeys are found in large numbers.

There are many varieties of apricots, mulberries, figs, peaches, and apples. The plum industry is second in importance from the export standpoint. From plums is made the national drink "Slivavitz," which may be taken internally or burned in an alcohol lamp. The varieties of fruits grown, however, are often inferior as apparently nothing has been done along this line for improvement. Much attention is given to the growing of garden vegetables and melons.

Serbia is an agricultural El Dorado, and if the untutored peasant now makes a living by antediluvian methods, what might be accomplished with capital and machinery? In pre-war days in Serbia, \$25 would have purchased a plot of land that would have kept

a man going the rest of his natural life.

The Serbs are a very energetic, hard-working people. Although they lost 50 percent of their male population during the war and 33 percent of their entire population, they came back without homes, tools, or livestock and produced one million tons of food products to export to starving Austria. They were the only nation in Europe to go back to work after the war. If one may judge from their staying at home and failing to figure in immigration statistics, it may be said that the Serbians are a well-satisfied people. And well they might be, for pauperism is unknown. By a Homestead Act in 1873, it was provided that a minimum of 3.41 hectares or 8 acres of land with house and farm implements, as well as necessary livestock for working the farm, cannot be taken for private debts. It was provided also that a farmer is forbidden to run a debt by giving promissory notes. This allows every man a place on which to live. If Serbia is a country without paupers, it is also a country without any idle rich or any aristocracy. As some one has remarked, a land which has had a pig driver for its ruler within the last century cannot boast of aristocracy; and for all that, Serbia would not boast about it, for the Serbians pride themselves on their democracy of spirit that makes King Alexander the idol of his people.

Industries are few, far between, and primitive. Every home, almost, makes its own clothes from home-grown wool and flax. Serbia came to America for one of its principal crops—corn. The Serbian makes corn serve almost every purpose encountered on the farm. It furnishes the meal he uses for his corn cakes, which form a staple diet in every home; the fodder for his cattle; and the grain for his hogs. So important is the pig industry in Serbia that one of the "Serbs' " wars with Austria is known in history as the "Pig War."

Under King Alexander the First, who was assassinated about 20 years ago, a considerable impetus was given to agriculture in Serbia by the importation from Germany of the Rural Cooperative Credit Association based on the Raifferssen principle. The system is very similar to our own Federal Reserve Loan Association which allows ten men to pool their resources and the entire membership stands the debt of the individual. The result is that the peasant is able to bor-

row money at a lower rate of interest and good terms of payment. Under this system the peasant has not lacked credit and has been able to undertake expenditures that otherwise would have been impossible.



THE FOUNDATION OF SERBIAN AGRICULTURE

Peasant girls in the Balkans begin to take their share of the rough work on the farm at an age when they should be playing with their dolls. By the time they reach "sweet sixteen" their hands are hard and calloused and their backs bowed. These women are as powerful and enduring as men, and there is little wonder that the harvests and the plantings were as large during the Balkan War, when all the men were at the front, as they were before the fighting population had to be called away. The Serbian woman makes a good housewife. She prides herself upon her household linen, her

jams, jellies, and sweetmeats, and her daily meals. She is the worker of the family, tending the flocks, plowing the fields, hoeing the corn, and flailing the grain. In other words, a good Serbian wife must be a master of all trades.

The Serbian peasant never brings himself to premature old age in pursuit of the almighty dollar. He desires only a comfortable living and regards his ease more highly than progress. He is given to sociability, however, and just as the rural farmer in our country in former times delighted to meet with his

neighbor at the crossroads postoffice to discuss politics and neighborhood affairs, so the Serbian peasant enjoys his evening at the village wine shop where he goes to talk politics more than to drink; for it is said that the Serbian peasant takes to politics as naturally as a duck takes to water. The people are frugal, simple-living, and intensely patriotic.

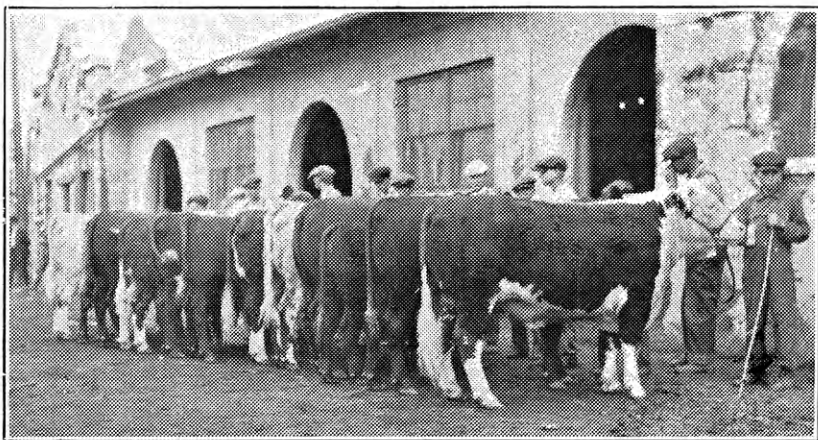
In order to better Serbian agriculture, the Serbians must have capital and machinery to operate their present productive farms successfully.

The Coming Kansas Stockmen

J. Wheeler Barger, '22

One of the most interesting classes of livestock shown at the Kansas Free Fair at Topeka, September 12 to 17, 1921, was that of baby beef. Entries were limited to Kansas boys and girls under 18 years of age. The class was put in this year at the request of the

son County and most of the prizes were won by them. The following is a partial list of the winners: First, Nelson Miller, Muscotah, on Hereford; second, Carl Gigstead, Lancaster, on Shorthorns; third, Clinton Thompson, Wakarusa, on Shorthorns; fourth, Martin Gill,



ENTRIES IN THE BABY BEEF CONTEST, ONE OF THE MOST INTERESTING LIVESTOCK FEATURES AT THE KANSAS FREE FAIR AT TOPEKA

Department of Animal Husbandry of the Kansas State Agricultural College, to develop greater interest in the feeding of younger cattle for the market.

Twelve prizes were offered by the fair association ranging from \$50 to \$10. Most of these prizes were duplicated by similar sums put up by the various breeders' associations of the state, and the American Hereford Cattle Breeders Association. A great deal of interest was shown by boys and girls from Atchi-

Musocath, on Angus; fifth, Harold Thompson, Wakarusa, on Shorthorns; sixth, Fred True, Perry, on Hereford; and seventh, Andrew Walton, Muscotah, on Angus.

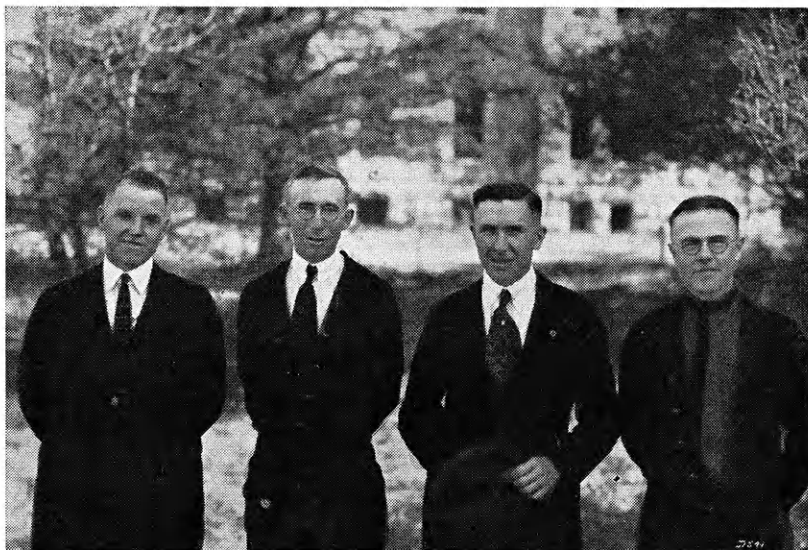
After the contest the calves were sold at public auction. Leading packing companies sent representatives to bid on the prize winners, and bought them at prices ranging from 13 ½ to 19 cents per pound. The calf which won first prize was fed and shown by a nine-

(Concluded on page 15)

Our Dairy Judging Teams Are Winners

Three successive victories by the Kansas Dairy Judging Team at the National Dairy Show have made the whole United States wonder what Kansas knows about the dairy business. Fifty-one teams have been defeated by the Kansas teams in the last three

Gottman of Kansas City, Raymond Campbell of Parsons, and G. C. Anderson of Bronson, won first and also won the Holstein cup. Mr. Gottman of this team was second high individual in the entire contest. The team of 1920, composed of Clemens H. Young of Man-



This is the Kansas State Agricultural College dairy judging team, with its coach, which placed first in the student competition of the recent National Dairy Show, St. Paul, Minn. It is the third time in succession that a Kansas college team has won the honor. Reading from left to right—H. W. Cave, coach; George Starkey, Syracuse; Lynn Copeland, Hutchinson; J. M. Moore, Stockton.

years. The reputation set by the Kansas teams was shown when after the awards at the last contest, one of the other coaches suggested that Kansas be barred from future contests so as to give the other schools a chance.

The contest at the National show is the largest and oldest competitive contest in the United States for judging dairy cattle. The Kansas State Agricultural College has sent nine teams to the National Dairy Show, and in the nine annual contests has ranked as follows: 1911, 3d; 1912, 3d place; 1913, 13th place; 1914, 2d place; 1916, 6th place; 1917, 9th place; and in 1919, 1920, and 1921, 1st place. There was no show in 1915 and in 1918 the Agricultural College sent no team.

In 1919, the team, composed of E. E.

hattan, Robert H. Lush of Altamont, and George M. Drumm of Manhattan, won four of the six cups offered in the contest. They ranked high on all breeds and high on both Holsteins and Jerseys. Clemens H. Young was high individual of the contest, with 21 teams entered. George M. Drumm was high judge on Jerseys, winning a 400-dollar scholarship in the Iowa State College.

All of the men on these two teams are directly connected with dairy industry at the present time. They are either dairying on farms of their own or are herdsmen on noted purebred farms.

The team this fall had a reputation to maintain, and repeated by winning first for the third time. This gives the school permanent possession of the National Dairy show cup and the Hoard's Dairyman cup. They also

ranked high on Guernseys, winning the Guernsey cup for this year. The men on this year's team are George E. Starkey of Syracuse, J. M. Moore of Stockton, and S. L. Copeland of Hutchinson, all seniors majoring in Dairy Husbandry. While no member of this team was the high individual of the contest, it was the uniformly high placings of all the men that gave them first place. As a team they ranked first on Guernseys, second on Holsteins, second on Ayrshires, and third on Jerseys. Moore placed high on Guernseys, Copeland second high on both Guernseys and Holsteins, and Starkey third on Ayrshires.

No other coach has ever accomplished Prof. H. W. Cave's feat of turning out three successive winning teams. No other coach has ever before even turned out two winning teams in succession. It has been the system that brought the results. In the first place, the students making the team have had wider experience with dairy cattle than most college students. The boys work every day on the local and college cattle. Then a few weeks before the contest in Chicago the team and Coach Cave visit herds in Kansas and other states, ending at Chicago with the necessary experience and ability to come out on top in the contest and carry trophies home to the Kansas State Agricultural College.

The 1921 team left Manhattan September

23. This gave them more than two weeks for work in practice judging among the dairy herds of Kansas, Missouri, Iowa, and Minnesota. In all, nineteen herds were visited, including Longview Farm, Lees Summit, Mo.; Waterloo Dairy Farm, Waterloo, Ia.; and Arden Farms, St. Paul, Minn. These farms are representative of the best dairy farms of the Jersey, Guernsey, and Holstein breeds, respectively.

This time spent in practice judging was in part, at least, responsible for the showing made by the team at St. Paul. From the time the tryouts began till the day of the contest, as many classes had been placed as would ordinarily be worked on in a semester of college dairy judging. Five days were also spent watching the work of the official judges at the Waterloo Dairy Congress. This gave an idea of the type of animal desired in the show ring.

The Student Contest is held each year in connection with the National Dairy Show. This year 15 teams from the largest agricultural colleges in the country were entered in the contest.

After the judging trip each year the Dairy Club of the Kansas State Agricultural College presents each member of the team with a gold medal showing a purple K, as a token of appreciation and remembrance.

A Tribute

Carson B. Roberts, '22

The bronze bust of the late Senator William A. Harris, which stands before Fairchild Hall, is the best remaining likeness of one of the biggest men both agriculturally and politically that Kansas has ever known. Colonel Harris, as he was familiarly known, perhaps did more for Kansas livestock than any other one man the state has ever claimed. More than that he sacrificed the dearest dream of his life to serve the commonwealth of the state of Kansas. Mr. G. A. Laude in his "History of Shorthorns in Kansas" says: "Col. W. A. Harris, soldier, statesman, and leading American breeder of Shorthorns was a shining example of a man who could have accumulated great wealth but who unselfishly gave himself to others."

Prior to the time when he was elected congressman-at-large Colonel Harris had built up one of the best herds of Shorthorn cattle in

America. This work he knew and loved but gave it up with never a question when the people of Kansas called upon him to represent them in the senate of the United States. During his term as senator financial difficulties necessitated the dispersion of his herd. And thus one of the greatest breeding establishments of America passed into history and with it a great man's dream of a lifetime faded forever.

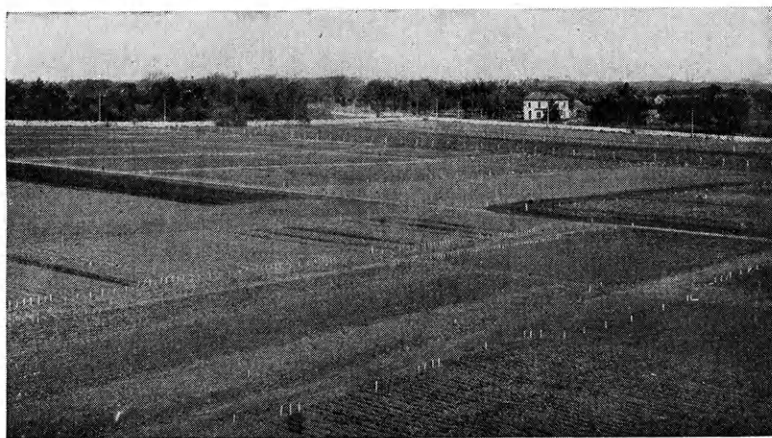
After serving six years in the United States senate, Colonel Harris entered the employ of the American Shorthorn Breeders Association. There he remained until his death, a true lover of good livestock and ever faithful to the interests of the people he represented. Students should remember, as they pass this familiar spot on the campus, this bronze bust is the best remaining likeness of one of the great men in the history of Kansas.

Selection as a Method of Improving Self-fertilizing Plants

B. B. Bayles, '22

That the agricultural producer of this country is becoming more efficient in the methods of production is shown by the fact that the part of the population engaged in agricultural work decreased from 87 percent in 1820 to 30 percent in 1920. In the last century this increased efficiency of farm production has been due to the opening of new

promising individuals from a group and using them as the basis on which to build a new population. We may recognize two kinds of selections as applied to plants, based on the method of fertilization; namely, (1) mass selection, and (2) pure-line selection. In cross-fertilized plants mass selection is used. This type of selection in brief consists of



GRAIN CROPS NURSERY, WHERE "KANRED" WAS DEVELOPED

fertile lands and to the marked improvement of farm machinery. While these two factors have made very great advances in the past, their progress has slowed down very much in the last few years and new methods of increasing the production of crops are taking their places.

The use of better cultural methods and the growing of improved adapted varieties of farm crops are giving very good results and will probably be relied upon to increase the efficiency of farm production in the future. In this article an attempt will be made to explain the system used in the improvement of self-fertilized crops.

Selection is the fundamental principle underlying the improvement of both plants and animals, and consists of choosing the most

choosing a number of plants which have the desired characters and planting their seed as a bulk sample. Cross-fertilized plants are not of a homozygous factorial composition and selection must be continual from year to year in order to keep the desired characters in fairly pure form. Corn and rye are well known examples of cross-fertilized plants which have been improved chiefly by mass selection.

In self-fertilized plants, pure line or individual plant selection is the general method of improvement. Hybridization is often resorted to but it is used chiefly as a means of bringing together new combinations of characters from which to select the desired individuals.

Populations of self-fertilized plants con-

sist of a number of pure lines which are homozygous in factorial composition and will breed true. In all self-fertilized species, however, some plants may be cross-pollinated under field conditions. Those hybrids will not breed true, but the proportion of heterozygous individuals from a given cross will decrease very rapidly with each succeeding generation. If only one pair of factors is involved and the progeny are self-fertilized for six generations there will be theoretically 98.4 percent of homozygous individuals. Even if many factors are concerned the population rapidly will approach a homozygous condition. Selections of individual homozygous plants from a population of a self-fertilized species will produce progeny which have the same genetic composition as the original selection unless mutations or field hybrids occur.

To start an experiment with a definite system on which to work and a definite object in mind is of very great importance in any branch of investigation. A few discoveries are made by accident but such discoveries probably would not have been made if the investigator had not had previous training along lines which enabled him to see and interpret the results which led to the discovery.

The methods of pure-line selection and the necessity of systematic investigation are brought out very well in the development of Kanred wheat. The history of Kanred will be taken up somewhat in detail to show the practical value of the pure-line selection theory.

In the summer of 1906 Prof. H. F. Roberts, then Plant Breeder of the Kansas Agricultural Experiment Station, selected 554 heads from Crimean wheat which had been brought over from Russia in 1873. These heads were sown with alternate rows of Kharkof, a standard variety, as check. By comparing such characters as rust resistance, grain quality, lodging, and winter-hardiness, with similar characters of the Kharkof checks all but 122 of the strains were discarded by the fall of 1908. The size of the plots of these 122 varieties was increased from one to ten rows each. In 1910, eighty-nine of the most promising selections were turned over to the Agronomy Department. Beginning with 1911 the more promising of these strains were grown in plots at the Agronomy Farm. Kanred, then known as P762, was selected

as one of the most promising strains and was grown at the Fort Hays Branch station and by ten farmers in various parts of the state in 1914. In 1915 the other branch stations and more farmers grew the variety in comparative tests with other standard varieties of hard wheat. Since 1915 the acreage of Kanred has increased very rapidly. From 4,000 acres in 1917, the acreage has increased to approximately 2,000,000 acres harvested in 1921.

The ultimate aim of all improvement of crops is better yield and quality. Kanred has produced a greater yield than the other varieties of wheat commonly grown and has given similar milling and baking results in tests which have been carried on since 1912.

Yield is really the summation of a number of characters, in many of which Kanred excels other wheats. Kanred is a few days earlier, often escaping hot winds or drought which sometimes cause serious loss to the Kansas wheat crop. About 20 percent of the wheat sown in Kansas is not harvested due partly to winter-killing which is not so severe in Kanred as in other varieties. Although stem rust is not a serious problem in the Kansas hard wheat district, the resistance of Kanred to some forms is a very desirable character. Kanred is also resistant to red leaf rust, which in certain seasons causes some damage to winter wheat in Kansas. Due to the combined effect of these qualities, Kanred has produced an average yield of not less than three bushels more per acre than Turkey or Kharkof.

Of the approximate 9,000,000 acres of winter wheat harvested in Kansas in 1921, probably 2,000,000 acres were Kanred. If the other 7,000,000 acres had been planted to Kanred, with wheat selling at \$1.00 per bushel it would have meant an increase of \$21,000,000 in the income of Kansas wheat growers, with practically no increase in the cost of production.

In addition to the present value of Kanred, this variety has possibilities which may prove to be of value to plant breeders. For instance, if the rust resistance of Kanred could be combined with the qualities of Marquis, the hard red spring wheat which makes up much of the acreage of the spring wheat belt, or with the characters of the soft winter wheats, the new variety would be of great value to the spring wheat or to the soft winter wheat section of the United States.

Pilots of the Show Ring

J. Wheeler Barger, '22

The members of the Department of Animal Husbandry are living up to their belief that they owe service to the livestock breeders of the state as well as to the students who come under their instruction. On the other hand, the leading practical and successful livestock men are behind the department and strong for the work it is doing. Each member of the staff has been called upon to judge livestock at one or more county fairs this summer and fall, and two members served as judges at state fairs in states other than Kansas. Not only do these men judge the livestock at the county fairs, but give reasons for their placings, point out the essential points to consider in selecting livestock, and answer any questions on which the livestock men need help.

Dr. C. W. McCampbell judged horses at the Minnesota State Fair; Shorthorn cattle at the Kansas State Fair at Hutchinson; Hereford cattle and horses at the Oklahoma Free

Fair at Muskogee; and Hereford cattle at the International Wheat show at Wichita. He also judged the livestock at the county fairs held in Belleville, Overbrook, Arkansas City, Winfield, and Harper.

Prof. A. M. Paterson was sent as official representative of the Kansas Free Fair Association to the Iowa State Fair the last week in August to get exhibitors for the Kansas Free Fair at Topeka. He acted as superintendent of the cattle department at the Kansas Free Fair; judged sheep at the Missouri State Fair; horses, sheep, and Angus cattle at the Oklahoma State Fair at Oklahoma City; and sheep, Shorthorn cattle, and Duroc Jersey hogs at the Oklahoma Free Fair in Muskogee.

Prof. F. W. Bell judged livestock at the county fairs held in Iola and Newton; Prof. D. L. Mackintosh judged at Iola, Mound City, and Valley Falls; Prof. B. M. Anderson at Council Grove, Emporia, and Hays; and Prof. C. E. Aubel at Burlington and Lebo.

The Agricultural Association

E. H. Coles, '22

For some time there has been a feeling on the part of both students and faculty of the Division of Agriculture that the division should be more unified. There seemed to be a sufficient amount of departmental spirit, but the thing most desired was a spirit of divisional interest and pride. It was to fulfill this need that the Agricultural Association was formed.

At the opening of the second semester 1920-21, Ira K. Landon, Chancellor of Alpha Zeta, called a meeting of all students in agriculture. At this meeting a committee was appointed to write a constitution and by-laws for the organization which was to be formed. The constitution was presented and adopted at the annual smoker held at the Community House. At the next meeting held on March 3, 1921, the following officers were elected: President, E. H. Coles; Vice President, W. R. Harder; Secretary, E. T. Means; Treasurer, J. J. Moxley; Marshal, C. B. Roberts.

The purpose of the organization can best be explained by quoting the preamble: "We, the students of the Division of Agriculture of the Kansas State Agricultural College, in order to further the best interests of the Divis-

ion, unite the efforts of the students of the Division for more effective work, maintain and support all meritorious student activities of the Division, and conduct such other business as from time to time may come before the agricultural student body, do hereby organize The Agricultural Association of the Kansas State Agricultural College."

The first undertaking of the new organization was the "Ag Fair." The day before the fair, the fair grounds presented a scene which would give one an impression that the association was accomplishing its aim, to unify the division. About three hundred students were there working their best, all with one central idea—to make the "Ag Fair" a success.

The publication of the "Kansas Agricultural Student" is the second large undertaking of the association. Its success or failure remains to be seen.

The future of the organization depends largely upon the interest shown by the students who are to carry the association forward. It is our hope that in years to come the Agricultural Association may become the strongest organization on the hill.

The Need for a Seed-control Law in Kansas

D. D. Brown, '22

"The four states surrounding Kanas have seed laws, and Kansas will be a dumping ground for poor seed until she has such a law. A firm could almost sell screenings here as pure seed and 'get away with it,'" said Mrs. E. P. Harling, seed analyst in charge of the Kansas State Agricultural College seed laboratory, in a recent interview. "The hundreds of purity records on file will tell the story of how many of our worst weeds are started in this state. The germination records will show how farmers have lost thousands of dollars by sowing seed of low vitality."

Mrs. Harling is recognized as one of the best seed analysts in the United States. During the busiest times she examines as high as 75 seed samples per week. The average for last year was 63 samples per week, most of which were examined both for purity and germination. These samples come from commercial seed houses and farmers. One Indiana firm is having analytical work done here.

Most of the adulterations and impurities are found among alfalfa, clovers, and grasses. That is doubtless because these seeds are small and the foreign matter harder to see. Yellow trefoil and the dodders are especially difficult to see in alfalfa and clovers. Dodder is a parasitic vine attacking clovers and alfalfa especially. One dodder plant will affect every host plant for an area of one square rod. More than that, this one plant will deposit hundreds of seeds which may grow at once or after having lain dormant in the soil for many years.

One pernicious sample of alfalfa was 80 percent pure and contained 449 dodder seeds per pound. If a farmer should sow 15 pounds of this seed per acre, he would seed one dodder plant to every seven square feet. Besides this the sample also contained 22 other weed seeds and six other agricultural seeds. Another sample contained 894 dodder seeds per pound, or one seed for every four square feet of the seedbed.

However, a bad sample is not always of such low purity. One sample of alfalfa sent in by a farmers' union elevator was 96.82 percent pure; but in that small percentage of im-

purity were 47 different varieties of weed seed. Twelve of these were the most noxious of weeds. This sample had a germination test of only 35 percent. Unfortunately the farmer had sown this seed before the analysis was made.

Of course low purity also is found in the larger agricultural seeds. One sample of wheat had a purity of only 84.4 percent. It contained six kinds of weed seeds, including Russian thistle. Sudan grass often contains seeds of its near relative, Johnson grass.

It seems as though weeds not common in this state will still be introduced. One timothy sample contained 141 oxeye daisy seeds to the pound.

Mrs. Harling says further: "Seed firms naturally send to Kansas seeds which they cannot sell in states with control laws. One Missouri firm sent in a shipment of alsike clover containing Canada thistle. They could not sell it in their own state. Another outside firm sold Turkestan alfalfa here for common alfalfa. Turkestan is not adapted to this section, so that was a flagrant case of mislabeling. Another plain case of adulteration was an alfalfa sample sold in Kansas containing 15 percent of red clover. This sample also contained a weed adulterant, yellow trefoil. Other agricultural seeds, lower in price, form a common adulterant.

"Seed companies should also be made to sell under a germination guaranty. In purity analyses all seed over a half seed are classed as pure, no matter how shriveled or decayed they are. They are discarded only in case the seed coat is gone. So samples of 99 percent purity and 30 percent or less germination are not uncommon. For this reason seed companies should be required to put both the germination percent and purity percent on the label.

"Twenty-seven states have well-defined laws requiring a labeling of both purity and germination. These states also prohibit the sale of seed containing over a certain limit of any one kind or a total of several noxious weeds. Usually the limit is about one seed in 2,000. Percent of trash must also be shown

on the label. Buyers of agricultural seeds in these states know what they are getting. At least, they have a chance to know, and if a purchase is found to be inferior to the guaranty as stated on the label, there is some

chance for recourse. It is important to remember that a seed law does not make it impossible to buy cheap seed. It simply makes it possible for a purchaser to *choose the quality of what he buys.*

Matchless Dale

J. Wheeler Barger, '22

To be the sire of more prize-winning animals than any other bull either living or dead without getting in the limelight of the show ring himself, is the record of Matchless Dale. This wonderful Shorthorn bull, who will celebrate his fifteenth birthday December 12, has done more than his share to make the Department of Animal Husbandry of K. S. A. C. famous.

Matchless Dale was born December 12, 1906, on the Shorthorn farm of Carpenter and Ross. His sire was Avondale who was sired by the famous Whitehall Sultan. The latter animal sired more individuals that contributed to Shorthorn history than any bull of the breed. The breeders of Matchless Dale are now the best known breeders of Shorthorns in this country, and have done a great deal to improve the breed by importing bulls from other countries, especially Scotland. Mr. Carpenter of the firm is a rich manufacturer of Mansfield, Ohio; his partner, Mr. Ross, came to this country from Scotland when a young man and worked on a number of stock-farms. He later met Carpenter, interested him in cattle, and got him to furnish the finances for the enterprise of raising purebred Shorthorn cattle.

Carpenter and Ross sold Matchless Dale, when yet a calf, to a farmer in Illinois, who became noted in 1908-09 for topping the Chicago cattle market. Prof. Tom Paterson, who was then a member of the Department of Animal Husbandry, K. S. A. C., went to visit the farmer to investigate the cause of his success. The farmer thought it was due to his careful feeding, and did not think Matchless Dale was an unusual animal. As a result, Professor Paterson bought the bull for \$400. Other animals on the farm were priced as high as \$1,500, but none of them has been heard of by breeders, while Matchless Dale has become famous in the livestock world.

Matchless Dale has sired more steers

which have won first place at the International Livestock Show than any other bull of any breed, living or dead. He has been at the head of the college Shorthorn herd for 11 years and is still in good condition for his age. Three of his daughters that have made splendid records are: College Emily, Matchless Queen, and Emma Dale.

According to the college herdsman, Matchless Dale has the best disposition of any bull the college has ever owned. He never becomes cross or fretty, and is easily handled. A child can lead him about or a stranger can enter his pen in perfect safety. The famous old bull is the acme of Shorthorn type. He is red with splotches of white, has strong masculinity, a fine head, a deep body, great width, and fine, dense bone. He is smooth and uniform in his conformation and shows the quality so much desired by his thin pliable hide. He has weighed as much as 2,500 pounds.



MATCHLESS DALE—A purebred Shorthorn bull owned by the Kansas State Agricultural College. He has sired a larger number of first-prize and champion steers than any other bull of any breed living or dead.

The Agronomy Farm

E. S. Lyons, '21

The Agronomy Farm, one and one-half miles northwest of the College campus, is a place of interest to many visitors throughout the year. Seldom an evening passes during the summer months that several cars do not drive through the farm looking over the fields and experimental plots. There are quite a few visitors from other experiment stations and colleges, as well as a few from abroad, who are visiting the college or making a study of agronomic work.

The farm occupies 300 acres of rolling upland and bottom land, of which about one-third is in experimental work in crops and soils. When purchased in 1909 it was in a low state of fertility on the rolling ground, while much of the bottom land was quite wet and swampy. By the application of barnyard manure, growing legumes and proper soil management, the fertility of the rolling portion has been highly improved. One field of 36 acres, lying over a ridge where one would not expect the best of soil, produced 31 bushels of Kanred wheat per acre last year. This rolling land is now producing much larger yields than similar land on adjoining farms. On the northeast corner of the farm is a low tract of land which was swamp when the farm was purchased by the College. This tract has been tile drained and is now an excellent field, drying quickly after a rain.

The farm is under the supervision of Prof. L. E. Call, head of the Department of Agronomy, who handles the work through a farm foreman. The equipment in the way of buildings, machinery, and work stock is ample to care for all the farm work. The experimental plots are so located as to secure, as nearly as possible, uniform soil conditions.

The fertility project, in charge of Prof. R. I. Throckmorton, deals with the kinds of rotations and fertilizer practices best suited to Kansas conditions. He is using a sixteen-year rotation of alfalfa four years, corn one year and wheat two years, alternating for 12 years; a three-year rotation of corn, cowpeas, and wheat, each one year; and a series of corn, wheat, and alfalfa, each continuous with various applications of fertilizers, green manure, and barnyard manure. Ten years' results have been secured from this work. The fer-

tility project also includes the experimental use of sulphur on old alfalfa.

Experimental tillage practices have been conducted for the same length of time as the fertility project and are under the direction of Prof. M. C. Sewell. Various methods of preparing a seedbed for wheat are tried, both in continuous wheat and in a rotation of corn, oats, and wheat. The work in the straw mulch project and the crop sequence project is also in charge of Professor Sewell. In the straw mulch work, straw is applied to the wheat in a kafir, oats, wheat rotation, and in the crop sequence work a study is made of the variation in the effects of corn and kafir on the wheat crop following.

In a visit to the farm just before harvest, one could not help but notice the work in variety testing of small grains because of the great variations. Variety testing is also conducted on corn, sorghums, and kafirs. Tests are being conducted on the rate and date of seeding wheat, methods of cultivation of corn, stage of cutting alfalfa, and methods of seeding sweet clover. These experiments are in charge of Prof. S. C. Salmon.

During the last few years Prof. J. H. Parker has been conducting work in plant breeding, testing the production of various selections and hybrids in sorghums on the farm.

That part of the farm not used in experimental work is handled as a general farm, growing corn, wheat, oats, alfalfa, kafir, sorghum, and sweet clover, increasing for commercial sale seed of good varieties which have been produced.

All seed grown on the farm is kept pure, this being the foundation source of all pure seed of these crops in Kansas. All pure seed of the small grains, kafir, sorghum, sweet clover, and such crops, is graded and sold as pure seed. Practically every year a larger amount of pure seed could be sold than was produced.

The Horticultural Club is the only one in the Division of Agriculture successful in entering the Aggie Pop stunt contest.