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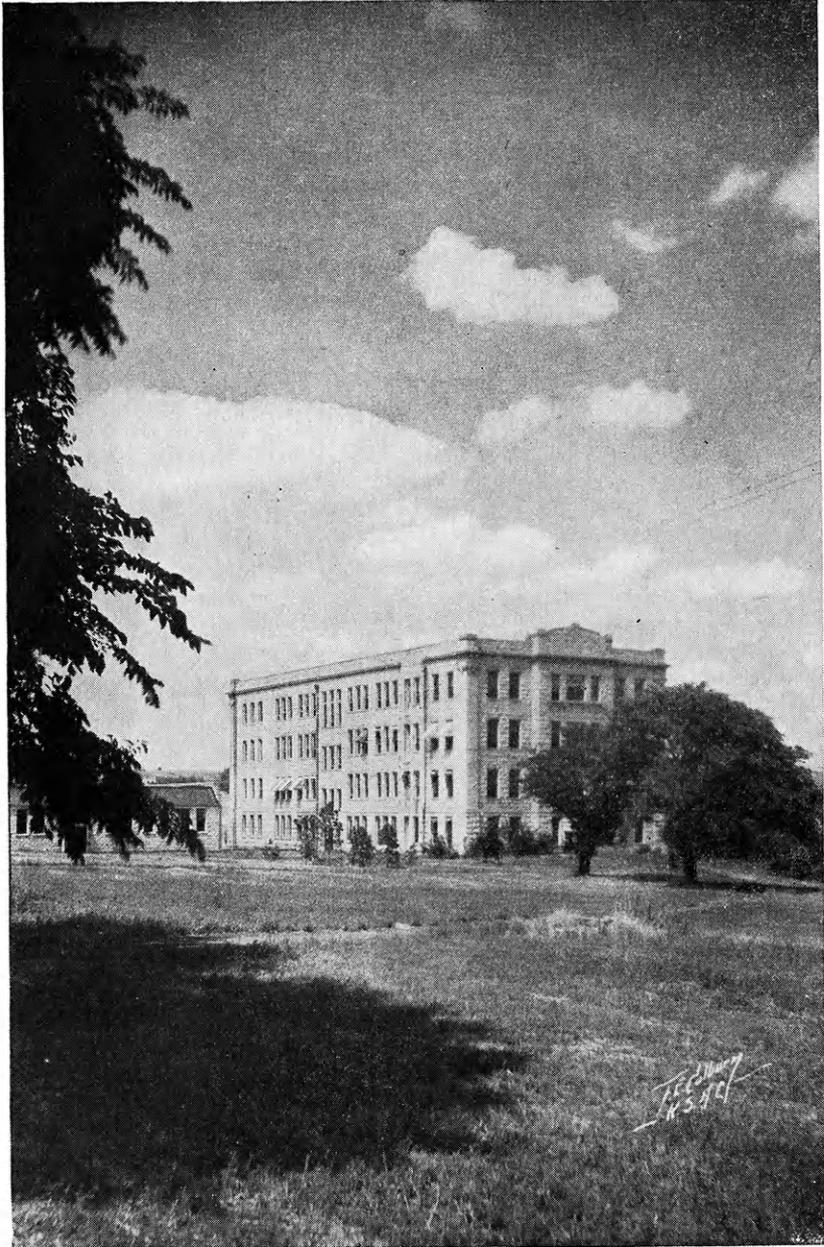
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ANDERSON HALL

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WEST VIEW OF EAST WING OF WATERS HALL (agricultural building)—Work on the west wing, to be located to the left of the Judging Pavilion, will begin in the near future. The appropriation available for the erection of this wing is \$275,000.

Livestock as a Factor in Eliminating Waste in American Agriculture

A. D. Weber, '22

As a nation and as individuals, Americans are often characterized as wasteful. Yet, American agriculture, so highly developed and becoming more successful each year, depends for its well being primarily upon the fact that livestock may eliminate and utilize the waste in a permanently successful farming system. In utilizing waste and transforming it into resources, the livestock industry becomes the backbone of successful farming.

We are too prone to take livestock for granted. Let us imagine that the stock in this country were reduced to a minimum, and that we were raising crops as we are now. What are the products that would be on hand in such a state of affairs that, because of no livestock, could neither be utilized nor sold because of no market demand to give them value?

The average American farm with its work horses, a few cows, sheep, and hogs is in itself proof that livestock eliminates waste. Such roughages as corn stalks, shredded corn, and stover are waste, yet they become an important factor in the wintering of farm animals. Horses and mules can be wintered in such a way that oat straw is fed for roughage, and wheat straw used for bedding. With the addition of but a small amount of concentrates, the animals may be wintered in good condition. A large portion of such a winter maintenance ration is thus waste material. Similarly, the aftermath of meadows makes good fall pasture, yet has no sale value except through livestock.

At the Fort Hays Branch Experiment Station in Kansas it has been demonstrated that a stock cow can be wintered on two tons of wheat straw. While a cow could be carried through in better shape with the addition of some concentrates, yet wintering one animal on two tons of straw is altogether possible and practical. Kansas raises approximately nine million acres of wheat each year that will yield one-half a ton of straw to the acre. She has 2,075,000 head of

stock cattle. Thus, it can be seen that all the stock cattle in Kansas could be wintered on the wheat straw produced in the state. Many states have problems and possibilities similar to this.

Almost every farmer has each year an alfalfa, clover, or some other hay crop down at the time of a prolonged rainy season. Through no fault of his own he has on hand damaged hay, or has hay put up at the proper time and under ideal conditions, but mixed with foxtail or other weeds. Such hay is valueless as far as the market is concerned. But the American farmer knows full well the value of just such hay as a roughage for wintering beef cows. These cows live on it, and with only reasonably good care serve the farmer well, because they are turning into dollars waste that could only be cashed in that way.

Weeds are waste and in abundance are said to typify a wasteful farmer. Yet sheep do their part in eliminating this waste, eating along fence rows, in ditches, and over hills and rough land. They also serve a very useful purpose in renovating pastures of wasteful weeds. It is said that sheep refuse less than 10 percent of the weeds found growing.

A short growing season, caused by late, wet spring and an early frost in the fall, usually finds the corn belt farmer confronted with the problem of disposing of immature corn. This corn is often marketed at full value because hogs can utilize it to good advantage.

The farmer makes his living from butter and eggs. Poultry that have the free range of the farm rustle most of their living, picking up grain here and there that otherwise would have been certain waste.

So much for the average farm on which livestock, by using roughages, cheap feeds, and waste products, furnish the living for the family and in addition greater profits. Another striking example of the saving effected by livestock is in freight rates. According to J. C. Mohler, Secretary of the

Kansas State Board of Agriculture, taking from Hutchinson to Kansas City as a basis, the freight on the feed necessary to produce 100 pounds of butter is \$8.11. The freight on the butter is 84.5 cents. On a 1,000-pound steer it would cost \$2.75 for freight, but on the feed necessary to produce that steer, freight charges mount up to \$27.18.

The by-products of various agricultural industries furnish further evidence that livestock utilizes large amounts of by-products that could be marketed in no other manner. Prior to the Civil War the Southerners did not realize the value of cottonseed, discarding it as worthless. But it was found that cottonseed in the form of meal or cake made an excellent concentrate for livestock, and at the present time it takes high rank as a concentrate for cattle. This one discovery has been of the utmost economic importance to southern agriculture.

Dried beet pulp, a by-product of the sugar beet industry, is of great importance in cattle feeding in those districts where it is produced. Were it not for livestock, beet pulp would be piled in great heaps, another example of waste that could not be used.

Corn gluten feed, a by-product in the manufacture of starch, and hominy feed, a by-product of hominy, are feeds which indirectly would have been wastes attributed to American agriculture, were it not for the fact that livestock can profitably utilize them. Before the days of prohibition, dried distillers' and brewers' grains were important in this class of waste products. However, they were made valuable because steers could transform such a waste into an edible product. Steers are also fed out in Illinois on silage made from sweet corn stalks. This industry has made full use of its by-product.

Such a utilization of by-products of agricultural industries by livestock makes for increased efficiency. It not only increases the total receipts a farmer receives for his products, but it lowers the price paid by the consumer for his meat.

Yet the efficiency of American agriculture in other ways than the utilization of waste, has livestock as its foundation. Take away livestock and our agriculture would soon be crippled. In order to maintain soil fertility there must be returned something to replace the constituents that have been sold in the form of crops. Livestock make necessary pastures and meadows which furnish humus

to the soil. This, with barnyard manure, maintains soil fertility, and checks erosion due to continuous cropping. According to the Missouri State Board of Agriculture, of the 20 Missouri counties buying fertilizers in 1920, only two were among the 20 leading livestock-producing counties of the state. Livestock saved 86 percent of the fertilizer bill in the counties where livestock was raised to a market extent. These livestock counties also ranked high in the production of crops such as wheat, corn, and oats. The value of land and buildings was, according to the Board's report, in favor of the livestock farming counties.

Livestock makes it possible for one man to handle more acres, particularly when cattle are grazed on pastures. On the other hand, livestock gives the farmer profitable as well as continuous employment throughout the year. Instead of idle, and therefore, wasted hours in the winter, milking cows, feeding hogs, cattle or sheep furnish the farmer work, and the use of roughages accumulated during the crop season, and thus at one stroke eliminate two sources of waste.

What would happen if all our ranges should suddenly become devoid of cattle and sheep? The waste would be enormous, for in many cases these lands are suitable only for grazing. Livestock use products that would be wasted on farms that can be cropped; but on many ranges they save the land from being a vast waste. Estimates by good authorities give the United States from 5,000,000 to 7,000,000 acres of lands that are suited only for grazing.

A statistician might, by careful research, arrive at a very close estimate of the saving brought about by livestock in the utilization of the waste products on the average farm and of that from agricultural industries; he might determine quite accurately how much less efficient American agriculture would be were it not for livestock; yet these figures would not show the value of livestock to American industry. The greatest value of livestock can only be felt and appreciated by the true lover of animals.

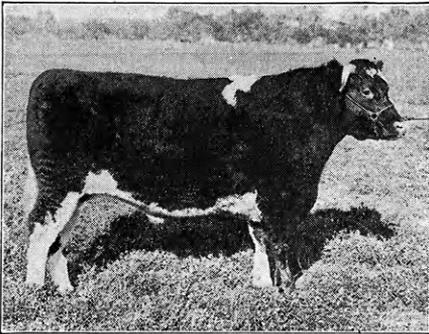
The boy who decides that, for him, the farm is better than the city, that God's out of doors shall be his choice, is many times motivated to that decision by his love for and growing appreciation of livestock. His interest may have been aroused by a calf club, or by an appreciative father; it matters not.

The devotion to livestock, carried by that boy to manhood, becomes vital in the elimination of waste. For every such boy thus trained, an efficient farmer takes the place of what would otherwise have been a less efficient one. Love for livestock makes for efficient farmers, good homes, and prosperity and content.

In conclusion, let us picture in our minds a livestock farm, not elaborate, but well equipped and stocked with good animals of standard breeds. It is getting dusk in the early winter, the chores are done and the stock provided for. Just before the farmer enters the house he turns and looks down on the barns and lots where everything is quiet

and contented. He smiles and is happy in the knowledge that all are cared for. It is largely his intense interest in livestock that has made him "carry on" to prosperity.

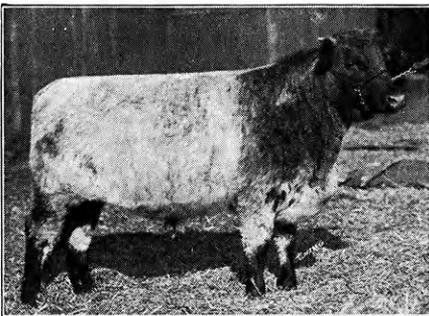
This farmer and others of his kind may or may not realize that livestock have utilized the roughages and waste products from not only their own farms, but from great agricultural industries. Livestock make possible a maximum utilization of agricultural lands. On all farms they help to maintain soil fertility and furnish regular employment throughout the year. These, and in addition the making of more contented, efficient, and prosperous farmers, concede to livestock a place of paramount importance in American agriculture.



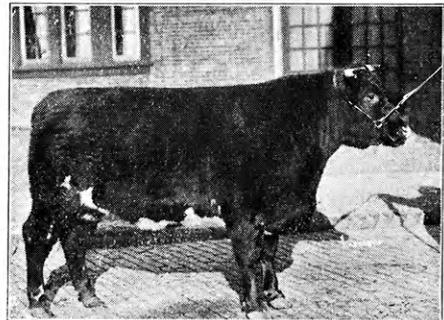
ARCHERDALE, First Prize Junior Yearling, International, Chicago, 1916



First Prize Shorthorn Steer Herd, American Royal, 1918



MERRYDALE, Champion Shorthorn Steer, American Royal, Kansas City, International, Chicago, 1916



MATCHLESS TYPE, Champion Shorthorn Steer, Denver, 1919

SOME PRIZE-WINNING STEERS FROM THE COLLEGE HERD

Reproduced from the Shorthorn in America, October, 1921

Hens With Long Distance Records

P. L. DePuy, '18

When the first two-hundred-egg hens made their debut into select poultry circles, they created quite a stir. They were heralded as super-hens. It was not thought that their records would become common, much less that there would ever be the two-hundred-egg strains of chickens which are beginning to appear today. The record, however, has been gradually pushed up until the three-hundred-egg mark was passed, and now a Black Orpington hen at the Sidney, Australia, Experiment Station has laid 341 eggs in 365 consecutive days. Surely the limit has been almost reached.

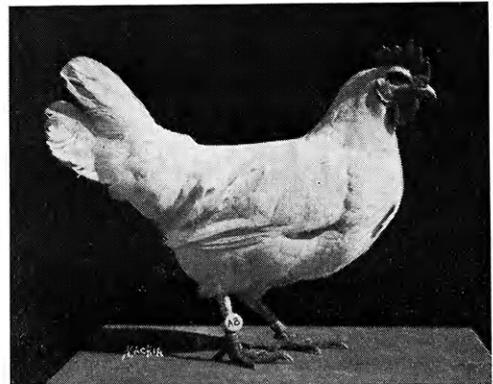
When hens were in the wild state, they laid only a few eggs per year and these were laid during the spring. The high records now being made are due to breeding and to stimulating spring conditions during the winter. The latter is accomplished by supplying green feeds, more protein in the ration, and fresh air houses. The physical strain of spring production is thus abnormally prolonged for the sake of making a record. The hen's vigor is frequently so exhausted after such forcing that her production for the remainder of her life is very poor. In order to keep on getting eggs, the owner must renew his flock often. The abnormally high producer frequently lays eggs of low hatchability, so that it is difficult to renew the flock or perpetuate the high production trait once it is attained.

Now suppose that we had a strain of fowls which, with good management but no forcing and with careful culling, would average eight hundred eggs in four years and that these eggs would hatch a high percent of vigorous chicks. Such a strain would be much more valuable than a strain of hens which would produce a few birds that could lay three hundred eggs in one year and then have to go to the butcher, and whose eggs would hatch very few vigorous chicks. At least one-half of a flock of the second strain would have to be renewed each year, while only one-fourth of the first strain would need to be replaced annually. Besides, it would be much easier and cheaper to renew a flock of the first kind. One of the greatest weaknesses of the poultry industry is the short

producing and breeding period of the individual bird and the fact that its true worth as a breeder is frequently not learned until after it is dead.

For these reasons, progressive poultrymen are beginning to turn their attention to the hen with the long distance record and thus considerable interest has been attracted by two hens owned by the College Poultry Department.

The performance of a certain Single Comb White Leghorn hen began to show up as soon as the department started to keep egg records in 1914. This bird was known as A8. The breeding records are incomplete



KANSAS A8—a purebred Single Comb White Leghorn with a fourth year egg record of 226, which is, so far as known, a world's record.

that far back but it is known that she was hatched prior to January 1, 1912. In other words, she was at least in her fourth laying year when the records started. Her performances for the remainder of her life are as follows:

LAYING YEAR	NUMBER OF EGGS
Fourth (Aug. 2, 1914 to Aug. 1, '15)....	226
Fifth (Aug. 2, 1915 to Aug. 1, '16)....	171
Sixth (Aug. 2, 1916 to Aug. 1, '17)....	171
Seventh (Aug. 2, 1917 to Aug. 1, '18)....	88
Eighth (Aug. 2, 1918 to Aug. 1, '19)....	27
Ninth (Aug. 2, 1919 to Aug. 1, '20)....	1
Tenth (Aug. 2, 1920 to Aug. 1, '21)....	0

She died in April, 1921, at the ripe old

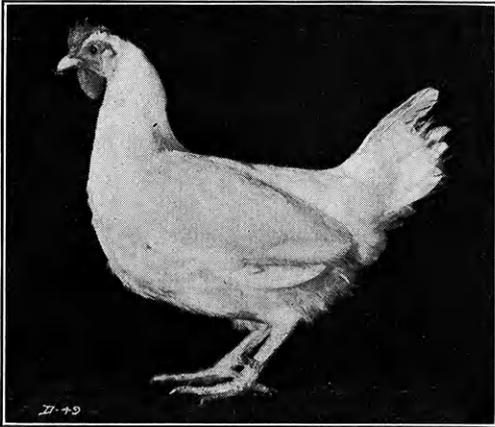
age of at least ten years, but her influence did not perish with her. She left a daughter known at the Poultry Farm as 2184. This

daughter's records up to the present time have been as follows:

LAYING YEAR	NUMBER OF EGGS
First (Nov. 17, 1918 to Nov. 16, '19)....	219
Second (Nov. 17, 1919 to Nov. 16, '20)....	233
Third (Nov. 17, 1920 to Nov. 16, '21)....	204
Fourth (Nov. 17, 1921 to Feb. 17, '22)....	8

This hen is still vigorous and has produced a number of daughters that are making good records.

May it not be true that this family and some others like it are the forerunners of a new development in the poultry industry? We have giant incubators and giant brooders, the day-old chick industry, pedigreed chickens, refrigerator cars for the shipment of poultry and poultry products, artificial lighting of poultry houses to increase winter egg production, and the three-hundred-egg hen. Perhaps the long distance egg machine is coming to make the industry more stable and more important.



KANSAS 2184—A daughter of Kansas A8 with a three-year record of 656 eggs.

SEED ANALYSTS MEET IN TORONTO

Mrs. E. P. Harling, seed analyst in the Agronomy Department of the college, spent a week during vacation in Toronto, Canada, attending the annual meeting of the Association of Official Seed Analysts of North America which was held in connection with the meeting of the American Association for the Advancement of Science.

The seed laboratory of the Kansas Agricultural Experiment Station is recognized as being one of the best in the country. The farmers and seedmen of the country place great confidence in the accuracy of purity and germination tests made in this laboratory. Since Kansas has no seed laws the work in the laboratory is entirely educational, for no one is required to test seed before selling it, as is the case in many other states.

A circular has been issued by Dr. C. W. McCampbell and Prof. H. B. Winchester, of the Department of Animal Husbandry, giving the results of recent cattle feeding investigations which were mainly in the use of grain in feeding cattle. This publication is Circular 92 of the Agricultural Experiment Station, "Cattle Feeding Investigations, 1920-21."

Doctor McCampbell in speaking of the circular said: "Everybody realizes that land prices are rising, that population is increasing, and that agricultural areas are not extending. All this means that the human animal will be a competitor with other animals for the use of the grain crops. This being true it is up to us to find means of producing fat animals without the use of much grain.

"The only solution of this problem is to utilize roughages for the cattle. So we are trying to be ahead of the times by working out means of using the maximum percentage of roughages in growing and fattening animals for the market.

"Another important point is that cattle feeders have been finding 2, 3, and 4-year-old steers the most profitable for fattening. Economic conditions have changed, however, and calves are now most profitable. But old timers are slow to appreciate the change."

Mr. Robert C. Gray, a farmer in Huntingdonshire, England, who visited K. S. A. C. in 1920, has written the college regarding arrangements for some English farm boys to enroll in the Division of Agriculture. Mr. Gray is very enthusiastic about the agricultural educational facilities at K. S. A. C.

Farm Tenancy in Kansas

H. L. Baker, '22

I. Is Farm Tenancy Objectionable?

Judging from many instances which are much too common, it seems that farm tenancy is objectionable. Chief among these objections are the short-time lease, the cash rental, absentee landlordism, the case in which the renter is a hindrance to a progressive community, and also the case in which the renter is practically ostracized from the social life of the community. These objections, however, can be overcome.

Tenancy has a legitimate place in our national land system provided it is of the proper kind and amount. If it were not for tenancy but few young men would be able to follow farming as a life work. There are four natural steps by which the goal of land ownership is most commonly attained. First, that of unpaid laborer on the home farm during which the young farmer learns the rudiments of his trade. The second step is that of farm laborer. During this stage the beginner obtains an actual intimate working knowledge of farming. The third rung in the ladder of farm ownership is that of tenancy. In this stage the young man has an opportunity to try out his capabilities as a farmer and to try out a farm and a community with a view toward ownership. The fourth rung is that of actual farm ownership and it is in this stage that the farmer gains the freedom and independence of land owner.

Tenancy is one the most important means of land transfer from one generation to another. The present day increase in tenancy is due largely to the retiring of farmers in the older settled regions. The average farmer begins renting at the age of 22, becomes an owner at the age of 32, retires at 62, and dies at 72. Thus, of the 40 years involved in each individual's actual farm experience, 10 years, or 25 per cent, of the time is spent as a tenant.

Thus, 25 per cent tenancy will take care of land transfer from one generation to another, but this is not the only function of tenancy. For many tenancy is a goal in itself. There are individuals who do well under the direction of another but who lack the neces-

sary judgment and initiative for independent success. For these a system of tenancy, in which landlord and tenant are in close cooperation, is most satisfactory.

II. Is the Situation in Kansas Alarming?

The United States Census for 1920 shows that 40.4 per cent of the farms of Kansas are operated by tenants. This is an increase of 3.6 per cent over the previous decade, and 1910 showed an increase of 1.6 per cent over 1900. Tenancy in Kansas is thus shown to be on a slight increase. However, there is surely no cause for alarm. As previously stated, tenancy of the right kind is a goal in itself for many farmers. Just what per cent has not been determined and perhaps cannot be, because of the varying conditions of different localities. Further, much tenancy is necessary for the transfer of land from one generation to another. Figures given in a previous paragraph showed 25 per cent of farms operated by tenants for this cause. The increase in tenancy could easily come from an increase in this transfer of land from one generation to another. In many cases sons are now operating as tenants the farms their fathers took up as settlers. A farm is now more difficult for a young man to obtain than it was 10 or 15 years ago. Possibly this has caused an earlier retiring of the parent generation than was prevalent a decade or so ago, and hence an increase in the amount of tenancy. Extensive data to prove this conclusion are not available but it seems a plausible hypothesis.

III. Kansas Needs Better Tenancy More Than She Needs Less Tenancy.

It was mentioned in the beginning of this article that cash rent, short-time leases, and absentee landlordism have been active in establishing the ill repute of tenancy in Kansas. It is human nature for the tenant to direct his labor so as to obtain the greatest immediate gain for himself. If he operates a farm for only a year he will obtain but little gain from methods that maintain soil fertility, such as the proper application of barnyard manure, the growing of crops for green

manure, raising leguminous crops, and the checking of soil erosion. If he does adopt some of these methods and grows better crops, his rent probably will be raised, particularly if he is paying rent, so he concludes "What's the use?" Also, if he rents for cash he probably will produce a large per cent of cash crops and do less livestock farming.

Data were assembled by Prof. W. E. Grimes of the Agricultural Experiment Station during the years 1914 to 1916 to compare the profits of landlords and tenants under different methods of leasing. Of the cash, share-cash, crop-share, and stock-share methods, the stock-share proved the most profitable for the tenant. The stock-share lease also returned the largest profits to the landlord, with crop-share, share-cash, and cash renting ranking in the order named.

The stock-share lease presents the greatest possibilities for improvement of the present methods of leasing. For the farms to which it is adapted this method should be followed. The lease is from 3 to 5 years. The landlord furnishes all land and buildings and pays all taxes and insurance. He furnishes all materials needed for the repair of buildings and fences, the tenant making these repairs. The tenant furnishes all tools

and machinery necessary to operate the farm efficiently. Sometimes there is the exception to this in the case of the manure spreader which may be furnished by the landlord or owned jointly by the landlord and the tenant. The livestock is owned jointly by the tenant and owner, excepting that in some cases the tenant furnishes the work stock. The tenant furnishes all labor necessary to operate efficiently the farm. Other expenses are shared equally by the landlord and the tenant.

All farm receipts are shared equally. The tenant usually receives garden products, fruit, butter, milk, and poultry sufficient for his own use. The kind of crops to be grown and the acreage sown to each are often stipulated in the contract. Alfalfa seed and seed for permanent pasture are furnished by the landlord. All manure produced on the farm is to be hauled out by the tenant and scattered where it will do the most good. At the termination of the lease all property held in common is divided equally between landlord and tenant. If they cannot agree, each may select a disinterested party and these two select a third. These three make such division of the property owned in common as they think will give the landlord and tenant equal shares.

Beef Cattle Herdsmen's Short Course



FITTING CONTEST, BEEF CATTLE HERDSMEN'S SHORT COURSE

The first beef cattle herdsmen's short course, which was completed January 7, was such a success that it is planned to offer the course every year. The date of opening, as a rule, will be December 27 and the work will be continued for approximately two weeks. Dr. C. W. McCampbell in speaking

of the course said: "The men who took the course were earnest and enthusiastic. All of them were established purebred stock breeders and came to the college in order to learn the finer points. I am very well satisfied with the results of our first herdsmen's course."

The Man Behind the Halterstrap

C. B. Roberts, '22

Someone has said, and aptly too, that behind every championship rosette is a man who has indeed scorned delights and lived laborious days. To the true lover of livestock that phrase has a meaning all its own. Among those who have never "been there" few indeed are there who recognize the importance of the man behind the halterstrap. For the lover of good livestock and of the livestock game there is a fascination about the show ring contests that never loses its hold. Anyone who has ever stood at the ring-side when two near-perfect specimens of the breeders' art were waging grim battle for the championship, must surely have felt the spirit of the contest.

Back of every one of those much-coveted blue or purple ribbons is a man who has been thinking, working, and living for his charges. For many weeks his only concern has been for the comfort and well-being of the show animals under his care. He knows all the little mannerisms of each of them and he can tell at a glance when one is not feeling just right or is acting the least bit different from the ordinary. He knows the kind of feed that each one likes, how much it will eat, and many other seemingly unimportant items which are the last word in the perfection of the feeder's art and which count most when the competition is keenest.

Another time when the knowledge and skill of the herdsman or shepherd are invaluable is in the spring time when the wee youngsters begin to arrive. It is then he must be on the job every hour of the day, for who knows but future champions are seeing the light for the first time? There always comes to the man who cares for the stock at this time of the year a certain satisfaction as he sees the little fellows grow healthy and strong and he is ever looking forward to the time when they shall have grown out, wondering if there will be one among them with the points of a champion. It is this promise of what the future holds, the game of forever trying to breed one better than anyone else has ever done, that makes the business of purebred livestock breeding so full of interest and so fascinating to those who have put heart, mind, and hand into it.

The next time you visit the barns and see a paddock containing a group of mares and colts or the sleek well-groomed show horses, remember that there is a man who is spending all of his days and his nights if necessary to see that they have proper feed and care. He is a feeder of the first rank and his heart is in his work. Praise his colts and you have made a friend, for his thoughts are always with them and he is ever looking forward to the time when this crop will have grown up and some new ones come on.

You should not fail to visit the sheep barn as soon as real spring weather has come. The yards and barns will seem fairly filled with tiny, long-legged, bright-eyed lambs, healthy and vigorous and with no regard for visitors or company when feeding time comes. That promising lamb crop will be due in a large measure to the fact that the college shepherd was on the job 24 hours a day for a month or more. His keen blue eye and ever ready smile have made him a host of friends here, and if you want to make a hit with him show him that you are interested, just a little, in a bright lamb or a good wether.

The cattle herdsman now at the college is a native of Aberdeenshire, Scotland. He has a string of prize steers under his care. The swine herdsman is carefully watching over the fortunes of the baby pigs. He never says a great deal but he is an excellent judge of hogs and is justly proud of several fall litters of pigs that would be well worth any man's time to care for.

To the men who have been working around the barns for the last two or three years has come a little of the romance and sentiment which, while seldom shown, is none the less a part of the lives of the men who watch over the flocks and herds of K. S. A. C. Lifelong friendships have been formed and many things learned, not found in textbooks.

This livestock business is a great game. It has its big men and some that are not so big; it has its romance and appeal as well as its hard times and setbacks. But the men who are successful in it are the men who have indeed "scorned delights and lived

laborious days." There is no better training for the animal husbandry student than intimate association with men who have had years of experience in the business. Such

associations will give the student a vision of the future and a practical knowledge of the inner workings of the business not found elsewhere.

College Loses Two Herd Bulls

Two herd bulls of the Kansas State Agricultural College recently met death in the usual way prescribed for livestock that have lived their years of usefulness and rendered distinguished service. These bulls were Matchless Dale and Prince Rupert 12th. For ten years Matchless Dale was head of the college Shorthorn herd. G. A. Laude, in his book "Kansas Shorthorns," says:

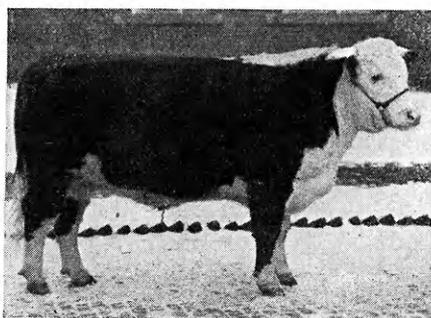
"The records made by steers sired by Matchless Dale are remarkable. The college has shown 18 steers sired by Matchless Dale that have placed not lower than third at the American Royal and the International show. At the American Royal they won two championships, nine firsts, seven seconds, and six thirds. At the International they won one championship, two reserve championships, six firsts, four seconds, and three thirds."

Tom Patterson bought Matchless Dale for the college in 1911 for \$400. He was purchased from Carpenter & Ross of Mansfield, Ohio. This buy was one of the wisest ever made for the department, for Matchless Dale was a wonderful specimen of Shorthorn type. His disposition was remarkable. He was always easy to handle and he transmitted this trait to his calves. In ordinary breeding flesh Matchless Dale weighed 2,400 pounds and carried as mellow a hide as the most discriminating breeder could wish.

Prince Rupert 12th headed a range herd for eight years. Year after year numerous outstanding calves were selected from among his offspring. So good was his record that in 1915, when he was offered on the Kansas City market, Prof. W. A. Cochel bought him for the college in spite of his old age.

His record on the range has been overshadowed by his record at the college. While head of the college purebred Hereford herd he has sired calves that have placed well up in the purebred individual steer classes. Fancy Rupert, one of his get, was champion Hereford steer at the American Royal and International shows in 1919. In the sale ring

Prince Rupert's merit also has been proved, for some of the highest-priced bulls sold at the Round-up and Blue Ribbon sales have been sired by him.



FANCY RUPERT—A steer never defeated in his class.

The college indeed benefited the breed when they rescued Prince Rupert 12th from the packer's cooler, and it is to be regretted that they could no longer benefit the breed by continuing his usefulness. He was a good individual with excellent quality and wonderful bone. His handling was extraordinary. These points, along with his smooth fleshing and smoothness about the tail head never failed to bring forth favorable comment from every breeder who saw him.

During the week of October 31 Dr. H. H. Love of the Department of Plant Breeding at Cornell University, gave a series of lectures to members of the agricultural staff and students interested in biometrical methods. Doctor Love spent considerable time with different members of the station staff in checking over experimental results and explaining the mathematical methods of measuring the accuracy of their data. He also gave interesting talks to the Alpha Zeta, the Klod and Kernel Klub, and the Ag Association.

Teaching Vocational Agriculture

C. D. Guy, '21

Although the teaching of vocational agriculture, as provided by the Smith-Hughes Act, has been a fundamental part of our public school system for only about five years, yet it occupies a large and well-established place in the list of opportunities for graduates in agriculture. Every year this field of service calls for an increasing number of the graduates of the division. This particular teaching job is so popular because of the scarcity of qualified men, the large field of service, the comparatively large salaries paid, and the value of the experience to the red-blooded, capable, young, farm-reared graduate.

The demand for qualified teachers is greater than the supply. Each year there are more calls for men to teach vocational agriculture than the institutions, qualified to furnish such teachers, can meet. In Kansas, the Agricultural College is practically the only source of candidates for these positions.

But the certainty of a position is not all that the teaching of vocational agriculture offers the capable graduate. It offers an unlimited opportunity for service which should be the key-note of every true Aggie graduate. He should expect to be of service because it is his duty and his privilege, and because there is no better way to achieve success than through service. Service is the sales talk by which he sells vocational agriculture to his community.

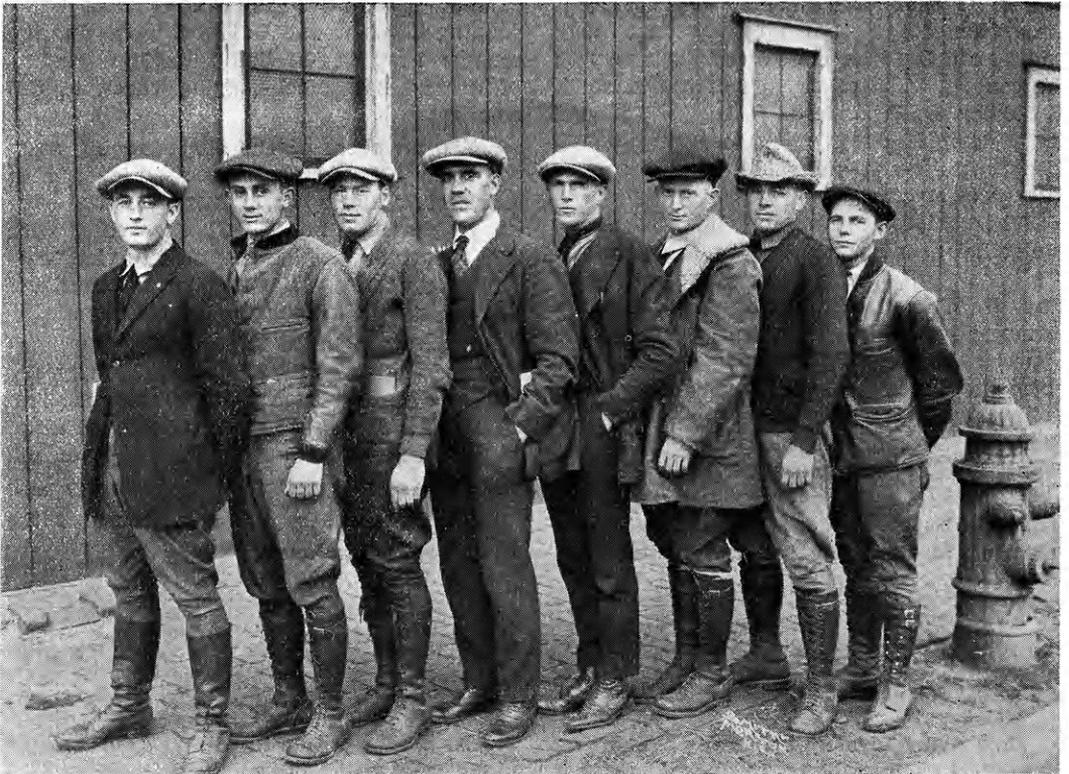
No teacher has a greater opportunity for upbuilding his community than the teacher of vocational agriculture. This he can do directly through the boys in his classes and indirectly through their parents and the other patrons of the school and farmers of the community.

Where there is no county agent or local veterinarian, the responsibilities of the teacher of vocational agriculture are enlarged, for he must assume some of the duties regularly assumed by men in these positions. This does not mean that he should be a slave and do all the work himself. Rather, he should be the leader. A good leader directs, and thus helps others do their work. He should not care who gets the credit so long as the work is done.

The job depends on the man. The right kind of a well-trained teacher of vocational agriculture can go into any community in Kansas and put on a successful program. He must know his material in agriculture, have the personality and ability to get along with the boys, and their parents, and all the worthwhile farmers and business men of the community. A vocational teacher has a big job. He must have tact, perseverance, interest in his work, habits of hard work, common sense, and spirit of service. The man who goes out on the job to get all out of it he can, rather than to put all into it he can, should scarcely hope for marked success. The man who decides to teach vocational agriculture because he doesn't happen to have anything else in view usually has such a short view that he can't see far enough ahead to be of any service to the community into which he goes, and it would be better for the community if he stayed out altogether. The man who goes on the job imagining that he is a finished product for exhibition in the community, will probably make a fair exhibit—for awhile. To put his job across successfully, the teacher of vocational agriculture must be always alive, looking, listening, asking, reading, studying, thinking, and working.

C. B. Quigley, '22, has accepted a position as dairy inspector with the Kansas City Producers Association. Mr. Quigley did his major work in animal husbandry and was a member of the stock judging team, placing high in all of the contests. He completed the work of his curriculum at the end of the first semester.

The second annual state high school judging contest will be Thursday and Friday, May 11 and 12. High school students entering the contest will devote a half day each to the judging of (1) beef cattle, horses, hogs, and sheep; (2) dairy cattle; (3) grain (corn, wheat, oats, kafir, and alfalfa); and (4) poultry. Practically all the Smith-Hughes high schools and many other high schools in the state will be represented.



THE 1921 STOCK-JUDGING TEAM—Left to Right—C. M. Willhoite, A. D. Weber, C. B. Quigley, Prof. F. W. Bell (coach), C. R. Hemphill, C. B. Roberts, J. J. Moxley, J. S. Stewart.

Records and Prospects in Stock Judging

For the third consecutive year Kansas has won first place in the students' stock-judging contests held in connection with the National Western Livestock Show at Denver. The score, 4,287 points out of a possible 5,000, made this year by the Kansas team was the highest ever made in one of these contests. By winning three times Kansas now gets permanent possession of the 500-dollar National Western Challenge Trophy.

There are but two other instances of a judging team winning a contest three years in succession. In 1907, 1908, and 1909 Iowa won the International contest at Chicago; the Kansas dairy-judging team won the National Dairy Show contest in 1919, 1920, and 1921. Kansas can, therefore, take pardonable pride in the performance of its stock-judging team at Denver in 1920, 1921, and 1922.

Kansas did not have the high man in the Denver contest this year. However, the con-

sistent placings of all members of the team made their victory fairly easy. J. S. Stewart won the 15-dollar cash prize given to the third individual in the contest. J. J. Moxley won fourth place and also the trophy offered to the best judge of fat stock. The other members of the team were A. D. Weber, C. B. Roberts, and C. B. Quigley.

With 21 teams competing Kansas placed fifth in the International contest at Chicago. It is considered an honor to be among the ten high teams in this contest. Kansas has competed in the International contest 16 times and has never placed below ninth, and only four times below fifth place. This gives Kansas, on the average, an equal ranking with any of the teams that have competed in this greatest of all judging contests.

In the International contest this year C. B. Roberts won five shares in the American Shropshire Registry Association for his pro-

iciency in sheep judging. A. D. Weber won the gold medal offered by the National Block and Bridle Club for the second high man in the contest. The other men of the team, J. J. Moxley, C. B. Roberts, C. B. Quigley, and C. R. Hemphill did excellent work in the contest. J. S. Stewart and C. M. Willhoite were alternates at Chicago.

The achievements of a judging team are controlled to a large extent by the coach of the team. All Kansans are proud indeed of Prof. F. W. Bell who has coached the three teams winning at Denver. An expert judge himself, Professor Bell is called on to judge at many contests in which he has no team competing. His wide experience and the thorough training he gives each man account, in a large measure, for the success of his teams.

Agricultural students, especially those majoring in Dairy Husbandry, contend that

in Prof. H. W. Cave they have the best dairy-judging coach in the United States. In like manner Prof. F. W. Bell is fittingly spoken of as the best stock-judging coach in the country.

The members of the stock-judging team this year all had practical experience with livestock, either as caretakers or as the owners of purebred herds. This, together with the opportunity which they had to visit leading stock farms prior to the International contest, gave them invaluable training.

The future looks bright for coming Aggie judging teams. A varsity activity fee will give much needed financial support. Professor Bell has already been mentioned as an outstanding judge and coach. Best of all, interest in stock judging by the many men who hope some day to be members of the team, was never keener.

The Grain Judging Contest

W. C. Wilson, '22

How many farmers, county agents or grain dealers know how to judge heads of kafir, milo, or ears of dent corn? How many can identify threshed grain of two-row and six-row barleys, or of different varieties of wheat and oats? Students at the Kansas State Agricultural College will have an opportunity to show what they know about grain and seeds in the Fourth Annual Grain-Judging Contest to be held March 25.

The contest was first planned and staged three years ago by members of the Klod and Kernel Klub, an organization made up of upper-classmen majoring in the Department of Agronomy. Since that time it has been held annually under the auspices of this club and with regularly increased interest. More than 200 students are expected to register for the contest this year.

Contestants will be allowed one minute each, to identify varieties of corn, wheat, oats, barley, sorghums, buckwheat, rice, emmer, and also wheat damages, such as yellowberry, binburnt, weevil eaten, musty, and smutted wheats. The judging work will consist of placing samples of soft and hard red winter wheat, red oats, yellow and white corn, kafir, and milo, and giving reasons for the placings.

Interest shown in the contest is remark-

able, and competition for the numerous prizes is expected to be close. Samples of all the grains will be on display for a week before the contest, and students who study these samples will know a great deal more about grain when the contest is over than they did before. Seedman, grain dealers, and publishers of farm papers are showing their approval of the affair by offering many substantial prizes to be given to winners in the contest.

Probably in few other contests at the Kansas State Agricultural College have the prizes been as large and as numerous as those offered in this contest. There are 13 prizes in all, ranging from the 20-dollar cash prize, given by the Kansas Crop Improvement Association, to three and five-year subscriptions to America's best farm papers. No cups will be given, as the committee has decided that loving cups are of little practical value to the average student. However, each winner will receive a premium ribbon, in addition to more substantial prizes.

It is possible that officials of the International Hay and Grain Show will put on a grain-judging contest at the International Livestock Show at Chicago next fall. According to Prof. J. H. Parker, the experience gained in such a contest as this will be of

practical value in teaching the student some of the things about grain that he must know, if he is to take a part in larger and more important contests, or act as judge of grain exhibits at county, state, or other fairs.

The rules of the contest are simple, practically the only stipulation being that no man

can receive more than one prize. Members of the Klod and Kernel Klub will register all persons expecting to enter the contest. The entrance fee is 50 cents. Members of the faculty of the Department of Agronomy will grade the papers and determine the winners, whose names will be announced promptly.

A Study of Swine Nutrition

M. E. Ptacek, '22

One of the projects of the Agricultural Experiment Station is a nutrition experiment with swine, conducted by the Departments of Animal Husbandry and Chemistry. The project is being conducted at the nutrition barn which is located on the campus directly east of Waters Hall. The main object of the experiment is to secure authentic information relative to the effect of continued feeding of certain specific rations upon the development of three generations of swine.

In the test are four lots of four pigs each and their rations are as follows:

- Lot 1. Shelled corn, 87 per cent; tankage, 10 per cent; bone ash, 3 per cent.
- Lot 2. Shelled corn, 82 per cent; tankage 10 per cent; ground alfalfa, 5 per cent; bone ash, 3 per cent.
- Lot 3. Whole kafir, 87 per cent; tankage, 10 per cent; bone ash, 3 per cent.
- Lot 4. Whole kafir, 82 per cent; tankage, 10 per cent; ground alfalfa, 5 per cent; bone ash, 3 per cent.

Each animal in each lot is fed its ration in an individual stall according to its appetite.

Individual measurements are taken every 90 days from the start of the experiment, as follows: (1) Length of snout, end of nose to base of ear; (2) length, base of ear to root of tail; (3) height at top of shoulders; (4) length of legs, elbow to the ground; (5) circumference of cannon bone; (6) heart girth. It is planned also that each pig that is farrowed in the experiment will be measured and weighed as soon as born.

The animals in the first generation of the experiment were started on feed February 23, 1921, as weanling pigs. They are all pure-bred Duroc Jersey gilts, farrowed in the fall

of 1920 and allowed to run with the fall crop of pigs of that year until placed on experiment. At the approximate age of one year the gilts were bred to a normal boar not in the experiment. The female offspring will furnish representative pigs to continue on the same rations and these in turn will be bred to furnish a new crop of pigs. The animals are all kept in a dry lot which is cemented so that no green feed whatever, other than that which may be supplied in the experiment, will be available.

A brief explanation of why the various rations are fed follows: It is generally understood that all animals require in their diets small amounts of certain substances, the composition of which is unknown, if normal growth or even maintenance of life is to be obtained. These substances have been called "vitamines." Practically all of the cereal grains, and some mill and packing house by-products, seem to be low in vitamine content. These vitamines seem to have a relation to certain diseases and pathological conditions of the tissues so that when animals, such as those in lots 1 and 3, are fed rations low in vitamines, their vitality and resistance to infection are lowered and their normal growth retarded. It is also known that the desirable vitamines are present in the stems and leaves of most plants. Hence lots 2 and 4 are fed ground alfalfa to supplement or make up the deficiency in the rations as fed lots 1 and 3. The bone ash is included in all the rations to alleviate any mineral deficiency that might be present in the grain.

The experiment will increase in interest and serve its purpose in supplying valuable information as the effect of the continuation of these rations is noted on the second and third generations.

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THE POINT OF VIEW

In an informal talk recently made to the Agricultural Association, Dean F. D. Farrell said: "You should look upon farming from the standpoint of an artist. An artist is one, who, when facing his task, asks himself, not 'What can I get out of this?' but 'What does this task mean and how can I best make it benefit society?' The proficient farmer who looks upon his business from the standpoint of benefiting society is just as much of an artist as was Beethoven.

"A large proportion of freshmen enter college with the wrong point of view," declared Dean Farrell. "They enroll solely or primarily because they think they can increase their economic earning capacity by finishing a college curriculum. They are partly correct in this belief. A person with a trained mind has a decided economic advantage over one who has not. But training people to make a living is not the most important function of a college, and training men to become efficient farmers is not the most important function of the Division of Agriculture. A college's biggest task is to train men to be leaders.

"Each student should regard himself as a possible future leader and should prepare

himself for leadership. It is a great mistake for a college man to prepare himself for a particular job which he thinks he will get upon graduation, rather than to prepare himself for life's work, regardless of the situation in which he may later find himself. A person who reaches the age of 22 lives, on an average, 45 more years and it is foolish to expect that he will devote all of his time to one particular job the remainder of his life after graduation. A student's greatest objective in college should be to develop character and other qualities of leadership that he may render the greatest amount of service to society.

"To be a leader one must be a good citizen, a good workman, and a good fellow. A good citizen not only pays his taxes, minds his own business, and keeps out of jail, but also does all he can to help make life richer and fuller for everybody. A good workman looks upon his job from the point of view of an artist, no matter what that job may be. A good fellow is one who is interested in what other persons are doing, who is a good listener to what others have to say, and who can talk about something besides his own job."

Opportunities in Agriculture

With eager expectation the Kansas agriculturist rounds the 1922 curve in the road and with hopeful eyes sees a more pleasant pike ahead. The worst has been left behind. Past this curve many sign posts flit by, all pointing toward prosperity. They read, "Better Credit Conditions," "Lighter Interest," "\$10,000,000 Freight Savings," and "Smaller Cost of Production."

The paralyzing effect of the sudden drop of prices in 1920 wears off. The farmer, who was the first loser and for a time seemed to be the principal one, has been the first to shoulder this loss and make preparation for the prosperity to come. The great national farm conference is not wasting time discussing the causes of the farmer's situation. It is "gunning" for effective methods of relief. The farmer, himself, is beginning to see that marketing costs can be reduced through organization.

The important part the farmer plays in the great economic system has been driven home in the past year and consequently the future promises him a more sympathetic at-

titude. With the prevalent belief that prices have hit bottom those farmers who have been restricted in buying will now resume business and enter the New Year with a spirit that promises better times for all.

During the past year many of the fainter hearts among prospective college students of agriculture have become frightened at the agricultural outlook and turned toward other industries. Some of these have served valuable apprenticeships in the field of agriculture and their natural inclinations fit them for successful agriculturists. Such prospective students should get the vision of this new dawn of prosperity.

Next year should see a great increase in the enrollment in the Division of Agriculture at the Kansas State Agricultural College. Every student in the division should direct some new men toward college work in agriculture; should help them see that the most satisfactory route to success and service is by higher education and that the opportunities for men college trained in agriculture were never better than they are today.

What Others Think About Agriculture

"To be a thoroughly equipped scientific farmer probably requires a higher education, certainly a more complete scientific education, than any of the learned professions, with the possible exception of Medicine."—Thomas Nixon Carver.

—O—

"Oft did the harvest to their sickle yield;
Their furrow oft the stubborn glebe
has broke;
How jocund did they drive their team afield!
How bow'd the woods beneath their
sturdy stroke!"

—Thomas Grey.

—O—

"When tillage begins, other arts follow. The farmers, therefore, are the founders of human civilization."—Daniel Webster.

"The life of the husbandman—a life fed by the bounty of earth and sweetened by the airs of heaven."—Douglas Jerrold.

—O—

"The agricultural population produces the bravest men, the most valiant soldiers, and a class of citizens least given of all to evil designs."—Pliny the Elder.

—O—

"There can be no greater issue than that of conservation in this country. Just as we must conserve our men, women, and children, so we must conserve the resources of the land on which they live. We must conserve the soil so that our children may have a land that is more and not less fertile than that our fathers dwell in."

—"THEODORE ROOSEVELT."

A Stock Judging Champion

C. B. Roberts, '22

The second high man in the intercollegiate judging contest at Chicago this year was Arthur D. Weber of the Kansas team. As it happened he also was high man in the United States, being beaten only by a member of a Canadian team. This is the highest honor ever won by a member of a stock-judg-



ARTHUR D. WEBER

ing team representing the Kansas State Agricultural College, and it was won by a native Kansas boy, educated in his own state and winning his place by virtue of his work and training at K. S. A. C.

Mr. Weber was born on a farm near Horton. By outside work he met his necessary expenses both in high school and in college. He began his training at the college by leading a champion steer around for exercise. His next job was feeding experimental steers. His biggest achievement in this line was the

show herd of steers he fitted and showed for the college at the American Royal and International Livestock Shows in the fall of 1920. This proved to be one of the best show herds the Kansas State Agricultural College has ever sent out, and much credit is due to Mr. Weber.

The record of Mr. Weber in stock-judging contests is almost perfect. In May 1920, he was second in the annual students' stock-judging contest and won first in the dairy judging contest the same year. He was high man in the contest of 1921, and in the students' judging contest held at the Kansas Free Fair at Topeka in September, 1921, he maintained his record by again winning first.

The Department of Animal Husbandry has come to rely on Weber. He has made good repeatedly judging livestock at county fairs. No serious complaint has ever been made over his placings, which shows that the knowledge and training he has gained are 100 percent practical. Not only has Mr. Weber won highest honors in stock judging, but he has been an honor student throughout his four years of college work and takes an active part in college affairs. He is a member of Alpha Zeta and Farm House fraternities, president of the Block and Bridle Club, and his essay on "Livestock as a Factor in Eliminating Waste in American Agriculture" was highly commended in the Saddle and Sirloin Medal Essay Contest at Chicago this year.

Prof. L. E. Call, head of the Department of Agronomy, has been elected President of the American Society of Agronomy. The society is composed of leading scientists of the country in agronomic lines.

J. Wheeler Barger, senior in Agricultural Economics, has been chosen to represent K. S. A. C. in the Missouri Valley Oratorical Contest to be held in St. Louis, March 10. Eight persons were entered in the tryouts, which were judged by four faculty members and two business men.

ALUMNI NOTES

W. B. Adair, '16, is county agent of Rice county with headquarters at Lyons, the county seat.

A. C. Apitz, '16, is assistant cashier of the Farmers' and Stockmen's State Bank, Manhattan.

O. B. Burtis, '16, is farming near Manhattan.

F. H. Dillenback, '16, is county agent at Troy, Doniphan county.

Preston Hale, '16, is farming at Bazaar.

A. E. Lawson, '16, is field representative of the American Shorthorn Breeders' Association on the Pacific coast.

A. J. Mangelsdorf, '16, is in the grain and seed business at Atchison.

A. F. Swanson, '19, is scientific assistant in charge of cereal investigations at the Fort Hays Experiment Station.

T. R. Pharr, '20, is farming in West Virginia.

F. E. Hayes, '17, is assistant state highway engineer of Nebraska.

W. F. Heppe, '17, is working with the Bureau of Markets at Fort Collins, Col.

J. R. Neale, '17, is with the land survey office of the United States Department of Agriculture.

C. L. Skelley, '17, is now working with the McMillan Publishing Company with headquarters in Chicago.

Donald Thayer, '20, is doing graduate work in soils at the Iowa State College at Ames. His thesis is on the effect of sulphur in liberating plant food. He is instructing part time in the department.

A. Wilcox Foster, '20, is located at Garnett as county agent of Anderson county.

O. F. Oshel, '13, is farming near Gardner.

C. A. Davis, '13, is in his second year as Director of Vocational Agriculture in the Miltonvale Rural High School.

E. E. Isaac, '12, is county agent of Clinton county, Mo.

L. A. Maury, '16, is captain in the United States Army and is stationed at Fort Riley at the present time.

R. V. Potter, '16, is assistant professor in farm engineering at Ohio State University.

Harley J. Bower, '10, is farming near Osage City.

J. V. Quigley, '16, is now dairy inspector for the Kansas City Consumers' League.

J. R. Mason, '16, is connected with the Great Western Sugar Company.

P. H. Wheeler, '16, is farming at Garden City.

A. E. McClymonds, '15, formerly extension agronomist at Colorado, succeeded L. C. Aicher as superintendent of the State and Federal Experiment Station, Aberdeen, Idaho.

L. C. Aicher, '10, is superintendent of the Fort Hays Experiment Station, Hays, Kan.

R. R. Hinde, '20, formerly with the Great Western Sugar Company, is Field Foreman at the Fort Hays Experiment Station, at Hays.

N. E. Dale, '18, is assistant professor in cooperative experiments in the Department of Agronomy.

W. C. Janssen, '19, is farming and teaching school at Geneseo.

C. W. Mullen, '17, is the assistant editor of the Oklahoma Farmer-Stockman, with headquarters at Oklahoma City. He says he finds this work very interesting.

O. T. Bonnett, '18, is teaching vocational agriculture at Alton.

Jacob C. Holmes, '12, is Livestock Specialist in Extension for the South Dakota State College at Brookings.

Raymond Campbell, '20, is dairy farming near Parsons.

Leonhardt Swingle, '13, is a date grower and nurseryman at Indio, Cal.

George E. Denman, '16, is superintendent of the Rural High School, Filter, Idaho.

E. D. McCollum, '21, is farming at Bogard, Mo.

Paul Findley, '20, is farming at Kiowa.

Ward W. Fetrow, '20, is working for a master's degree in the University of Wisconsin, Madison.

W. E. Grimes, '13, is working on his master's degree in the University of Wisconsin, Madison.

Paul C. Mangelsdorf, '21, is assistant to Dr. D. F. Jones, geneticist of the Connecticut Agricultural Experiment Station, New Haven. During the winter months he takes graduate

work at the Bussey Institute of Harvard University under Dr. E. M. East.

W. N. Skourup, '15, is assistant in the State Oil Inspection Office, Topeka.

O. C. Crouse, '11, is farming at Harlan.

J. H. Cushman, '17, is chemist for the Lithoprint Company, New York City.

H. L. Cudney, '09, is farming at Trousdale.

Merton L. Otto, '21, is farming near Riley.

G. M. Drumm, '21, is taking work under the Jersey Dairy Scholarship at Ames, Iowa. Drumm was high man in Jersey placings at the National Dairy Show in 1920.

John E. DuBois, '18, is associated with the Burroughs Adding Machine Company with headquarters at Wichita.

Luzerne H. Fairchild, '16, is assistant professor in the Department of Dairy Husbandry at Purdue University.

R. E. Freeto, '15, is farming near Anness.

Walter A. Gillispie, student in the Division of Agriculture, 1914-1916, is assistant cashier of a bank at Harper.

Fred Griffee, '19, is assistant professor in plant breeding in the University of Minnesota, St. Paul.

K. D. Thompson, '20, feels his age and responsibility because of the birth of a daughter recently. Mr. Thompson is county agent of Rooks county.

I. K. Landon, '21, is managing a farm near Girard.

The recent papers carry the announcement of the marriage of Miss Margaret Woodman, '21, to Mr. S. J. Gilbert, '21. Mr. Gilbert is teaching vocational agriculture at Woodston.

K. R. Crow, student in the Division of Agriculture, 1915-1918, is manager of the Thompson Brothers Stock Farm at Wakarusa.

Robert H. Lush, '21, is farming near Altamont.

Karl Knaus, '14, is State County Agent Leader, Division of College Extension.

Leon M. Davis, '09, is in charge of News Service, Dairy and Poultry Division, Bureau of Markets, United States Department of Agriculture.

W. D. Essmiller, '12, is farming near Great Bend.

C. L. Howard, '20, is county agent of Ellis county with headquarters at Hays.

Robert Osborn, '17, is the city dairy inspector at Cedar Rapids, Iowa.

Ivan A. White, '20, is doing intensive farming in the irrigated section of the Rio Grande Valley near Welasco, Tex.

G. E. Thompson, '11, is agronomist of the Agricultural Experiment Station and professor of agronomy in the University of Arizona, Tucson.

R. K. Bonnett, '13, is professor of agronomy in the University of Idaho, Moscow.

Earl Ramsey, '12, is farming his own irrigated ranch on the Snake river in Idaho.

Dr. C. W. McCampbell was reelected president of the National Association of State Livestock Registry Boards at the last meeting of this association, which was held in Chicago during the International Livestock show. Doctor McCampbell has been president of this organization for nine years.

In the crop improvement work 120 headrows were harvested this fall from a cross of Red Amber X feterita. These 120 strains were selected as the most promising from 15,000 plants grown in the F3 generation last year. The object of this project is to isolate a new variety of grain sorghum with a sweet juicy stalk and which will give a good yield of both grain and forage.

It pays to produce quality products. On October 24, 1921, when first eggs were quoted at 47 cents per dozen on the Kansas City markets and farmers were getting from 40 to 45 cents at country grocery stores, a Topeka firm which buys on a quality basis was paying the producer 52 cents per dozen for extra firsts, 39 cents for ordinary firsts, and 28 cents for seconds. The premium placed on quality is much larger than if one is supplying a select trade.

"Patiently stood the cows meanwhile and yielded their udders
 Unto the milkmaid's hand, whilst loud and in regular cadence
 Into the sounding pails the foaming streamlets descended."

—Henry Wadsworth Longfellow.

The Alfalfa Seed Industry In Idaho

L. C. Aicher, *10

Superintendent Fort Hays Agricultural Experiment Station

Southern Idaho is an ideal seed-growing section where climatic influences are seldom detrimental to the production of high-quality seed. Practically all the alfalfa seed grown in Idaho is produced on irrigated land where the moisture supply can be controlled at will. Seed is produced at elevations varying from 2,000 to approximately 4,500 feet above sea level. This includes the area embraced in the Snake River Valley from the western Idaho line as far up the valley as Blackfoot.

The production and marketing of alfalfa seed in Idaho are very closely interwoven. The Idaho growers realize that successful marketing requires first of all that a good product be produced. More and more attention is being given to methods of production. Improved methods of handling the crop to prevent staining and mixtures are being put into practice. Particular attention is being given to the eradication of weeds that the alfalfa seed may show a high purity test. Average annual weather data are being studied by officers of the growers' associations that suggestions may be made regarding best average date of cutting seed to avoid frost damage. Threshing and hulling equipment are being given careful attention to the end that sufficient machines are provided to thresh all association seed in each respective district within a reasonable time, thus avoiding waste and insuring the prompt storage of seed in the warehouses ready for cleaning, and the economical use of the association's cleaning machinery.

The alfalfa seed business in Idaho has become a real business. It has taken on the nature of a permanent institution, such as dairying or fruit growing. Rotations are being used to overcome weed troubles. Practices in one part of the state are not applicable to other parts where elevation enters into consideration. The character of the land has much to do with the method of

handling a seed crop, even on adjoining farms. For instance, at the lower elevations, either the first or second crop may be used in the production of the seed crop, whereas at the higher elevations, from about Twin Falls upward, the first crop is used, as seed grown from the second crop will not mature because of the shorter season. In the Aberdeen Springfield district the first crop must be used, altho pasturing off the crop until



HARVESTING ALFALFA SEED IN IDAHO

about the middle of May is quite generally practiced.

Purity of seed is governed quite largely by the percentage of weed seed present. All successful alfalfa seed growers in southern Idaho follow more or less systematic methods in ridding fields of weeds. Early in the spring the fields are given a thorough double disking, the disks usually carrying heavy weights. At the lower elevations where the first growth is cut for hay, most weeds are killed and removed with the hay crop. Careful growers cultivate following the removal of the hay crop in order to destroy any weeds which might produce another crop. Where the first crop is used for seed production, the fields are cultivated early in the spring to kill weeds and start weed growth. These fields are then pastured until about the middle of May, when they are again thoroughly cultivated and if necessary given a light irrigation.

*The author was formerly Superintendent of the State and Federal Experiment Station, Aberdeen, Idaho.

The weed problem is constantly becoming more troublesome to the seed growers because of the many canal and ditch banks. The canal rights of way as a rule are permitted to grow weeds and these weeds drop seeds in the water which later find their way to the fields. In some sections it is almost impossible to grow a clean seed crop because of the canal weed nuisance. Many canal organizations are now fencing all canal rights of way and putting on sheep to keep down the weeds and grass. The additional expense of fencing is about offset by the income from



CULTIVATION TO KILL WEEDS AND INSECTS

wool and mutton produced, and the system effectively solves the weed problem.

Another nuisance affecting the Idaho seed grower's income from the alfalfa seed industry is the alfalfa weevil. These pests, when sufficiently numerous, can readily destroy a whole seed crop. They can be controlled and cannot be said to be serious if community action can be obtained in killing them. Thorough cultivation at timely intervals and spraying with a mixture of calcium arsenate and water when the damage is first noticed usually checks the damage from this insect. The total cost of spraying is about \$1 per acre. Weevil damage is a matter of recent development in the alfalfa seed industry in Idaho and the seed growers are somewhat worried as to the effect it will have on the industry.

The irrigation an alfalfa seed crop may require varies with the character of soil and the amount of slope the land may have. From one to three irrigations are given. Crops are often grown without irrigation where stored moisture is available or the water table is not too deep. Unless spraying

for weevil becomes necessary there is very little additional work required to bring a seed crop to maturity. Harvesting begins in August at lower elevations and in September at the higher elevations. Seed is usually cut before the first killing frost appears.

Because of high freight rates and heavy operating costs, brought about by high land values, high taxes, weed control measures, and losses from weevil and other insects, the Idaho seed grower is compelled to grow a better quality product and produce a larger yield per acre than his Kansas competitor in order to stay in the business. Yields up to 25 and 28 bushels per acre are occasionally reported. Average yields of re-cleaned seed approximate six bushels per acre for the state. The Idaho growers have been able to convince the buyers that they grow a hardier product and sales have been increasing from year to year. The prices the Idaho growers receive for their common alfalfa seed are influenced directly by the amount of seed grown in Kansas. Production in Kansas fluctuates greatly and whenever this state has a large crop, the price in Idaho is depressed, and a small crop in Kansas boosts prices in Idaho. The hope of the Idaho producer rests in his ability to produce a higher grade of seed. This he endeavors to do by maintaining the beautiful yellow color characteristic of Idaho seed, and eliminating the percentage of weed seeds and inert matter. The large bulk of common alfalfa coming from Idaho is produced in the south central part of the state. Grimm alfalfa is produced almost entirely in the upper Snake River country in Bingham county, embracing territory contiguous to Aberdeen, Sterling, and Springfield. Some small fields of Cossack have been planted near Twin Falls but seed from these fields has not as yet reached the market.

Cooperative marketing of alfalfa seed has been made a real issue in Idaho within the past year and the growers are now sufficiently organized to sell cooperatively a very large portion of the seed which is produced. The Grimm alfalfa seed growers were the first to develop successfully a marketing organization. The Idaho Grimm Alfalfa Seed Growers' Association has been incorporated and maintains headquarters at Blackfoot. All the seed handled by the Association is assembled at the cleaning plant at Blackfoot and re-cleaned. This one organization of growers produces more genuine Grimm alfalfa

fa seed than all other sections in the United States combined. The 1921 crop exceeded 20 carloads of fancy Grimm seed. This crop is now being put on the market.

This Association is patterned after the California cooperative organizations. The growers signed a five-year contract which binds them, among other things, to deliver all Grimm seed grown to the Association. The Association also supervises production in order to insure receiving a standard grade of seed from all growers. All Grimm fields were inspected during the blooming period for trueness to type, and twice afterward for weeds. Maps of each farm were made showing location and acreage of the Grimm fields. In addition to these precautions, each grower before being permitted to sell seed through the Association was required to furnish the Association the original affidavit showing the source of seed used in planting the Grimm fields. The strict rules of the Association were followed rigidly and several growers, because of irregularities, were not permitted to join the Association. The membership embraces approximately 95 per cent of the Grimm alfalfa acreage in Bingham county and approximately 85 per cent of all the Grimm alfalfa acreage in Idaho.

All seed grown by the members is shipped to the cleaning plant of the Association where it is re-cleaned, scarified, and bagged in 150-pound Association branded bags, each bag being tied and metallicly sealed with the Association seal. The seed is sold in these sealed bags, under a positive guaranty that it is genuine Grimm seed, if the seal has not been broken. The Idaho Grimm growers have taken a long stride forward in thus protecting their industry, and will no longer condone adulteration and misbranding by seed dealers. Before the organization of the cooperative association much more seed was sold for Grimm than was ever produced, and the menace of misbranding and adulteration constantly caused the Idaho growers much trouble. They hope through organization to place the entire Grimm seed business on a much higher plane.

The Grimm alfalfa is a hardy strain of northern-grown alfalfa and is particularly known for its winter hardiness. It is used extensively in the northern states where the hard and severe winters cause winter-killing of the common alfalfa. The Grimm

can usually be distinguished from the common at blossoming time, by the wonderful variegation in color of bloom which it produces.

State weed laws in Idaho are becoming more stringent. It is no longer possible for dealers to work off a poor grade of weed-ridden seed upon the farmers. Grades for seed have been established through the office of the Commissioner of Agriculture. These grades are patterned after the national wheat and corn standards and are not compulsory. The outcome is being watched with interest by both the grower and the dealer.

The State Seed Commissioner, by means of the State Seed Analyst located in his office, is able to check up on and enforce the weed laws. The able manner in which seed inspection service in Idaho has been handled has had a salutary effect upon the whole alfalfa seed business in the state, and has also stimulated the progressive growers to the production of a better grade of seed, because they realize that increased effort would be rewarded in an increased price for the product.

EFFECT OF RATION ON SALT CONSUMPTION

Prof. H. B. Winchester of the Department of Animal Husbandry, is conducting an experiment to find the effect of ration on salt consumption. Two groups of cattle are being used. One gets a wet feed in the form of silage and one pound of cottonseed meal daily. The other group is fed on alfalfa hay only. It has been observed generally that cattle fed on a ration high in moisture used more salt than those on a dry ration, and Professor Winchester is having accurate records kept of the salt consumed after due allowance has been made for weather conditions.

The seniors in Agricultural Economics, in the selection of their departmental emblem, adopted something which has utility and which will have value in the future. They say they are very nifty things to have around.

Ross J. Silkett, '22, who during the first semester completed the work for the degree in agriculture, majoring in agronomy, is located at La Crosse. He is county agent of Rush county.

The Average Counts

Ernest Reichart, '23

In dairy farming, as in many other lines, Americans think they are far ahead of the rest of the world. Hasn't America the only 37,000-pound cow in existence, and don't American cows hold practically all other world's records? Yes, in that phase of the industry Americans have a right to consider themselves leaders. However, when comparing American cows on the average with those of other nations, the situation looks quite different.

United States Department of Agriculture statistics were shown at the recent National Dairy show comparing the average yearly production of American cows with those of some of the leading dairy countries of the world. Some of the outstanding figures are as follows:

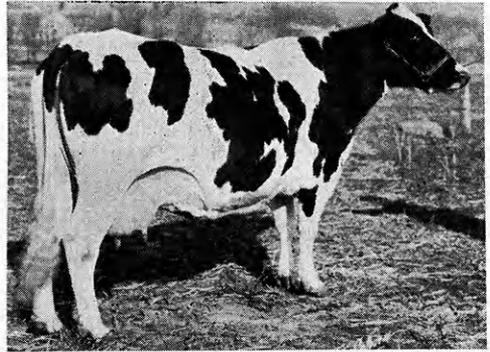
COUNTRY	AVERAGE YEARLY PRODUCTION
Netherlands	7,585 pounds
Switzerland	5,950 pounds
Denmark	5,666 pounds
United States	3,627 pounds
Kansas	3,250 pounds

Why can the Dutch farmer's cows produce more than twice as much as the American farmer's cows? There seem to be only two possible answers; namely, (1) the Dutch farmer's animals are of superior breeding, or (2) the Dutch farmer is a better dairyman. On duly investigating the first answer it is found that the Dutch farmer's animals are not superior enough to account for the great difference in production. It is true that there are probably no farmers in the Netherlands, in Switzerland, or in Denmark who would attempt to produce milk with nondescript cows such as many American farmers use. It is true also that although the European farmer has not the advantage of using such proved sires as are found in this country, through cooperation in ownership of bulls his herd sires are afforded greater opportunity of improving the standard of his cattle.

The fault seems to lie with the individual American farmer. The majority of American farmers keep cows as they do chickens—as a necessary nuisance. From the time the first pasture shows a little green until the first frost, a cow is expected to exist and pro-

duce on the meager supply of grass she is able to find. During the winter months she is fed a little prairie hay or alfalfa, with an ear of corn on Sundays and holidays. Her housing and general care are on a plane with her feed.

That proper care and feed pay is splendidly illustrated by the work of cow-testing asso-



CARLOTTA EMPRESS FOBES—A purebred Holstein cow owned by the Kansas State Agricultural College. She holds the record in the college herd for the production of both milk and butterfat. She produced in one year 27,398.2 pounds of milk and 803.334 pounds of butterfat.

ciations. Although their main function is to determine which cows are making money for their owner and which are not, they also illustrate the value of proper feed and care. The average production of 40,000 cows entered in cow-testing associations in the United States in 1920-21 was 5,980 pounds of milk and 246 pounds of butterfat. Comparing this with the average previously mentioned for all cows in the United States, a difference in average annual milk production of 2,353 pounds will be noted.

Figures for Kansas for the same year, 1920-21, show that cows in the cow-testing associations produced an average of 6,068 pounds of milk, or 2,818 pounds more than the average cow kept in Kansas. Part of this difference might be attributed to the fact that the cows were of better breeding than the average, but as the above cow-testing association figures include cows which were shown to be unprofitable, not too much emphasis should be laid on this fact.

The problem, then, that the American farmer faces seems to be one of care and feeding, as well as better breeding.

The Northern Cutover Timber Lands

W. O. McCarty, '23

During the past few years the supply of cheap land in the West has diminished to such an extent that the people of the Middle West have been forced to look elsewhere for cheap land to develop into producing farm lands. This fact, together with the fact that real estate firms and lumber companies have proved to be good advertisers, has turned attention to the cutover timber lands, or the so-called cloverlands, of the northern part of the United States. This being the case, some facts regarding the climate, soil, and crop adaptation of this northern district, as well as the kind and amount of work necessary to bring the land into cultivation may be of interest to readers of the Agricultural Student.

The cutover timber lands comprise a large area of land in northern Minnesota, northern Wisconsin, and the upper peninsula of Michigan. Practically the whole area was originally covered with a great forest consisting of white pine and hard maple on the well-drained land, and of white cedar and tamarack in the swamp areas. Other forest trees of little or no commercial value were also found in the forest area, and these trees, whose wood is of little value, are now found growing upon the land that is not included in the swamp areas. The swamp areas produce practically the only forest products from the whole cutover district. It is from these swamp areas that we get our present supply of telephone poles as well as our supply of white cedar shingles and white cedar fence posts. Only in a few remote areas is the virgin timber untouched.

However, the swamp areas are of little interest to the prospective settler for the soil consists of sour wet peat material that will not even be available for special crops until an expensive drainage system is installed. Naturally, drainage of the swamp areas will not be likely to take place until the uplands are developed. The uplands, therefore, are the lands of special interest at the present time.

The whole forested area came into the possession of large lumber companies about 75 years ago. These companies soon logged

over the land, taking out the white pine and leaving the hard maple, hemlock, ironwood, basswood, and other hard wood trees which were at that time of no particular value. Later the hemlock became valuable as a source of tanbark and the hard maple and other hard woods became valuable in the manufacture of furniture and flooring. Consequently the land was logged over again. This time the hard woods were taken, leaving nothing but the scrubby soft wood trees, such as popple and birch. The birch is a scrub variety of white birch, and the popple is not poplar but a worthless small tree resembling poplar in appearance only. Such trees cannot be used for any purpose except for pulpwood in the manufacture of paper. At present pulpwood sells for such a low price that it is not possible to pay the freight to the mills and make any money from the sale of the wood unless the land happens to be located near a paper mill. This makes it impossible for the settler to obtain an income from the land until the land is cleared and a crop is grown. Even after the land is put into cultivation the first crop planted is often of no value because a dense growth of a fern-like plant occupies the soil pretty thoroughly the first year after it is cleared and put into cultivation.

Clearing the land is an immense task since the rainfall over the district averages close to 40 inches per year. This insures a quick growth of brush where the trees are cut off. For this reason the settler must clear a very small patch at a time, then remove the stumps and plow the land so that the work that has already been done is not lost through the growth of a new crop of trees upon the land he has just cleared. Nor is this his only problem in clearing the land, for he has to clear away the old pine stumps. These stumps vary in size from one to four feet in diameter and since the land was originally heavily timbered, the stumps will be found to be numerous, not more than 10 or 12 feet apart each way. The removal of these old stumps is complicated by the fact that they are but partially decayed. Explosives only tear them apart, leaving the roots to be dug

out by hand labor. Stump pullers usually break them off, leaving the roots to be dug out by hand. When the land is at last free of forest growth the settler finds that he must haul off several tons of stones per acre. Since the soil is of glacial formation, the stones are in the form of rounded granite boulders ranging in size from marbles to stones weighing a ton or more each. These stones are thoroughly mixed through the soil, some being found on the surface of the ground and others at various depths throughout the soil.

With the land cleared, the next question is the question of suitable crops. Corn is out of the question for the growing season is too short for corn to mature. Sorghums, too, fail to grow well or to mature. Winter wheat will not live through the severe winters. Spring wheat does not grow well, possibly because of the sandy soil. Oats, barley, and Rosen rye are the chief grain crops and barley does not grow so well as it grows farther south. Clover grows very well indeed, but it winterkills too often to make a dependable crop. Alfalfa will grow in the district but alfalfa in such a northern climate where the rainfall is heavy and the soil is sandy does not thrive and soon dies out. Timothy grows well and is probably the best hay grass for this type of land. Native pasture grasses are unknown for no grass grew in the heavy timber. Kentucky bluegrass and redtop will grow, but they make a very poor growth for the soil is very sandy, and both Kentucky bluegrass and redtop grow best on clay loam soils. Small fruits, truck crops, and root crops grow very well.

The settler from the Middle West must change his whole system of agriculture when he farms in the cutover timber land section. He must farm on a small scale instead of on a large scale; he must grow truck crops and small fruits instead of cereals; he must raise dairy cattle instead of beef cattle; and finally, he must give up his farm machinery and do more hand labor. Moreover, he must remember that even at the best he is not near a market for his truck crops and small fruits; that his dairying is going to be hard work where his only dependable forage crop is timothy and his summer pasture is poor even for the short summer season when pasture is available. For grain feeds he must depend entirely upon oats, rye, barley, and

mill feeds. His stock must be well housed and well cared for because the winters are very long and cold.

Even with small fruit and truck farming the work is hard and the returns uncertain, for the soil is far from fertile even when it is first brought into cultivation. The soil is sandy and the humus content is low. A great deal of it is acid and the calcium content is low. This means that lime is needed even before the first crop is grown. Limestone is not found to any great extent in the district and hence lime is comparatively expensive. The soil also responds to the use of phosphates, so it is doubtless low in phosphorus. The humus and nitrogen content is naturally low and it is hard to build it up because the number of leguminous and green manure crops that can be grown on sandy soil in such a region of short seasons and cool climate is limited.

Among other factors that should be considered before purchasing land, especially in the northern part of the cutover timber lands, is the fact that a killing frost, particularly on the lower land, is a possibility at any time during the summer. A killing frost does not occur every summer by any means, but it is always a possibility. It occurred twice in the upper peninsula of Michigan during the summer of 1920. These frosts occurred July 29 and August 29, and ruined the crops on large areas of land. Another factor to be considered is the extreme cold of the winter season. The ground freezes to great depths if it is not covered with snow. This causes the soil to heave, killing the clover and all similar crop plants. The heaving brings up a new supply of stones too, which must be removed from the land before the next crop can be cultivated. Fence posts are also heaved up a little each year so that the fences must be rebuilt every few years. The snowfall is usually heavy, resulting in almost complete isolation of the farmers for about four months of each year. The temperature is quite often as low as 20 degrees below zero for a month or more at a time and it frequently goes as low as 40 degrees below zero.

Land companies and lumber companies are anxious to dispose of the cutover timber land, as it is no longer of value to the present owners who bought it merely for the timber that grew on it. These lands are highly ad-

vertised in Iowa and Illinois and to some extent in Kansas. The real estate dealer sells the land during the summer months when the climate is delightful and things are looking their best. In 1920 this land could be bought for \$20 an acre. The purchase price is indeed low compared with the purchase price of lands in the Middle West. It would

be well, however, for the farmer of the Middle West to consider the cost of bringing a farm in the cutover timber area into cultivation and then contemplate the changes he will have to make in his mode of living and farming before he decides to leave the Middle West and go to the cutover timber lands to make a living and a farm home.

Melrose Good Gift

Lynn Copeland, '22

Melrose Good Gift, head of the Ayrshire herd of the Kansas State Agricultural College is a sire of outstanding merit. He is nearly eleven years of age; active, and still in service at the college dairy barn. His sons and grandsons are scattered over the entire country, giving him a distinct place in the Ayrshire breed. He is a great sire, both by inheritance and performance.

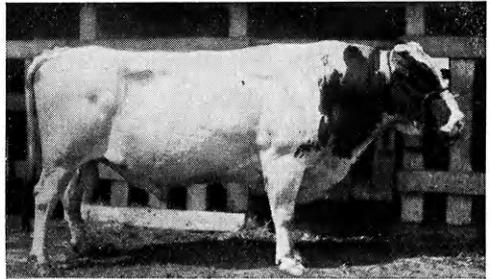
Melrose Good Gift is not an accident of breeding, but it is not his pedigree that attracts the attention of the Ayrshire enthusiast. The value of any dairy herd sire is measured by his individuality, the ability of his daughters to produce large amounts of milk and butterfat, and the popularity and prestige which he adds to the breed. When judged by practically all of these standards, Melrose Good Gift commands a most important position. The ability of his daughters to produce so much more than their dams has made for him a place of honor among Ayrshire sires. His size, capacity, and extreme dairy type and temperament indicate his ability to sire high-producing daughters.

At present, Old Melrose has eleven daughters in the advanced registry, with many more still to be tested. These 11 daughters have 20 records, averaging 11,188.3 pounds of milk and 432.7 pounds of butterfat. The 18 records of their dams made at nearly corresponding ages average 8,583.7 pounds of milk, and 325.08 pounds of butterfat. This shows for the daughters the remarkable increase of 2,604.6 pounds of milk and 107.67 pounds of butterfat over their dams.

Melrose Good Gift also sired a world's

record daughter. Melrose Canary Bell 2nd broke the world's record in the Junior, two-year-old, 300-day, Roll of Honor class, with 11,633 pounds of milk and 392.93 pounds of butterfat.

The Ayrshire Breeders' Association awards a French cup each year. Two of Melrose



MELROSE GOOD GIFT—Head of the college Ayrshire herd.

Good Gift's daughters have been French cup winners. Melrose Canary Bell won a cup in 1917 as a junior two-year-old with 13,785 pounds of milk and 502.91 pounds of butterfat. Bangora's Melrose won a French cup as a senior three-year-old, producing 14,515 pounds of milk and 568.05 pounds of butterfat.

This wondrous Ayrshire bull was secured in a trade from Purdue University in 1912. He has a son at the head of the Ayrshire herd in Purdue University and another at the head of the Ayrshire herd in the University of Nebraska at the present time. He has had a meritorious and interesting record and if any bull deserves large recognition for creditable performance, Melrose Good Gift should indeed be long remembered.

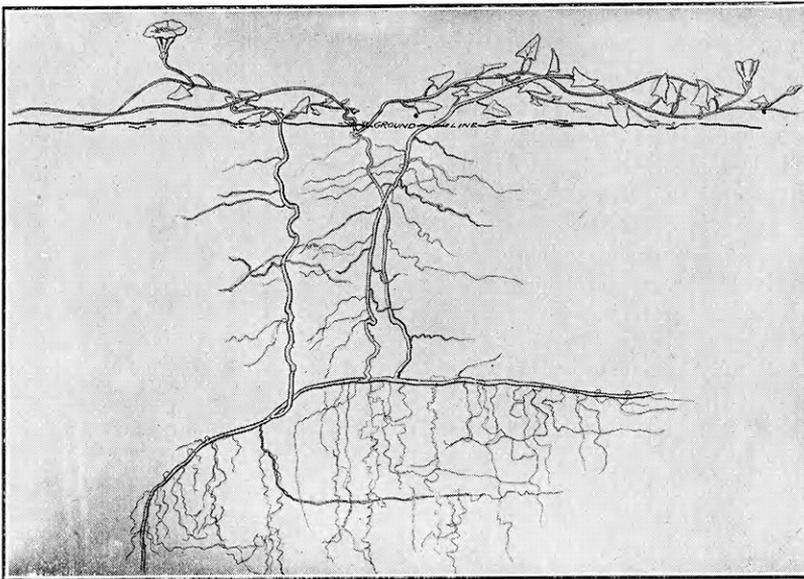
The Weed Problem

A. L. Austin, '22

It is said that no one factor has so much influence on agriculture as weeds. A weed, according to its most widely accepted definition, is a wild plant which has a habit of intruding where it is not wanted. Very few people realize the tremendous damage done by these pests. It has been estimated that in Iowa the annual loss to the corn crop

per acre than corn regularly cultivated three times.

It is interesting to note that very few of our dangerous weeds are native to the United States. Among the imported noxious weeds are the Russian thistle, Canadian thistle, quack grass, Johnson grass, Caltrops, and field bindweed. They were first introduced



FIELD BINDWEED, SHOWING MANNER OF GROWTH BOTH ABOVE AND BELOW GROUND LINE

alone, due to weeds, is \$8,000,000. The loss to all crops in that state is \$25,000,000. It has been further estimated that if the loss in the United States from weeds could be done away with for one year, the amount saved would be more than the total national debt before the world war. Weed control would increase yields one-fourth to one-third, and if they could be entirely controlled the labor of farming would be decreased by one-half. An experiment conducted by the Department of Agronomy of the Agricultural Experiment Station since 1914 has shown that if weeds are scraped off but the ground not cultivated at all, the yield of corn would be but a bushel or so less

as impurities in imported seed, as foreign matter in the wool or hair of imported animals, and in many other ways. They are extremely hardy and prolific. There are many agents of dissemination and distribution. Some of these agents are wind, water, animals, trains, motor cars, threshing machines, and sale of impure seeds. Some weeds have spread over a large territory in a very few years, while if proper measures had been taken they could have been stamped out easily at their first appearance.

Why are weeds allowed to spread in this way? The reasons are many. One reason is that farmers have tried to handle more land than they could handle properly. Most farm-

ers too, have considered weeds as inevitable and have neglected them because they did not realize their importance. Again, most of these new or dangerous weeds are not recognized until they have obtained a foothold too strong to be easily dislodged. Even if they were recognized very few people know the proper methods to use for their eradication. It is only with a thorough knowledge of their habits of growth and a certain means of identification that they can be controlled.

It is not well known to the students that a course for this purpose is offered at the college. This course is called "Seed Identification and Weed Control." It consists of one hour of lecture and three hours of laboratory work per week. The lecture consists of a discussion of the origin, duration, growth, habits, ecological relationships, and control of the most important weeds. The laboratory consists of the identification of weeds and their seeds. This course would be extremely valuable to any one intending to farm, since the weed problem is naturally of first importance to the farmer. It would be of still greater importance to the county agent or to the rural school teacher. These latter persons will have many calls relating to identification and control of weeds. The Department of Agronomy can greatly benefit those not in school by identifying any weeds which are sent in and giving information concerning eradication.

HORTICULTURAL NOTES

Agricultural College students should be prouder of their institution after visiting the University of Kansas. The Aggie campus is one of the finest in the country with its great lawns surrounded by large trees, many of which are evergreens, thus giving some color in the winter months.

The Department of Horticulture plans to set out a great many new trees this year. The grounds of the engineering building need much attention. As the excavation for the west wing of Waters Hall will be started soon, it is hoped to complete the grading in front of the engineering building before spring.

A visit to the orchard on the Horticulture Farm would prove interesting because of the new experimental work on the question of cover crops which was started this fall. Wheat, rye, Canada peas, and hairy vetch are the principal cover crops being tested out. This experiment will have to run a number of years before significant results can be expected.

Ground has been prepared on the Horticulture Farm for setting out an experimental vineyard. This vineyard will be about two acres in extent and will include all varieties of approved commercial value. The planting will be made early this spring.

D. R. Hooton, '21, is in the employ of the U. S. Department of Agriculture at San Antonio, Tex. He lately supplied the class in sub-tropical pomology with illustrative material including fruits of the fig, jujube, citrange, Japanese persimmon, and pomegranate.

The large concrete greenhouse bench which the Department of Horticulture built last summer is standing up perfectly and giving entire satisfaction. Directions for construction of similar benches may be obtained by writing to the department.

One hundred forty new lantern slides have been received for use in landscape gardening work. These slides represent the development of landscape work from ancient to modern times, and will prove of great value in giving students a broad conception of the art.

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GOLD MEDAL BAKERY

Interesting Records from the Dairy Herd

E. R. Button, '23

Some outstanding records in milk production are now being made by cows in the college dairy herd. This is especially true of the Holsteins. Carlotta Empress Fobes finished in December a year's record of 27,398.2 pounds of milk and 803.3 pounds of butterfat. (Page 56.) In other words, she made the best yearly record ever made by a cow in the college herd. Maid Henry Pontiac the last of November completed a year's record of 21,767.9 pounds of milk and 728.3 pounds of butterfat. Lady Vale Walker was the first 20,000-pound cow owned by the college.

In the Ayrshire breed, B. M.'s Bangora Melrose, the first daughter of Bell's Melrose, the present junior Ayrshire herd sire, to freshen, shows prospects for a big record as a two-year-old.

Imported Pallas shows up the best among the Guernsey breed, with a year's record just completed of 13,240.5 pounds of milk and 624.75 pounds of butterfat. This is the state record for the breed.

Owl's Design, the 16-year-old state-record Jersey cow, has in the past year completed a record of over 500 pounds of butterfat.

—O—

Prof. J. B. Fitch, head of the Department of Dairy Husbandry, was elected secretary-treasurer of the American Dairy Science Association at a recent meeting. The association is composed of professors and investigators in dairy work in the United States and Canada. The Journal of Dairy Science, published by the association, is a recognized authority on dairying. Professor Fitch has been a member of the faculty of K. S. A. C. since his graduation from Purdue in 1910, and this honor is a recognition of his work in advancing the standing of the Department of Dairy Husbandry here, until it ranks among the leading schools of dairying.

—O—

An ounce of prevention: Provide ample house room for the flock of poultry this winter. Nothing tends more to disease than an overcrowded condition.

If hens are laying at the rate of 50 percent, at the present price of grains it is costing not more than 10 cents per dozen to produce eggs. Why complain of hard times?

—O—

All large commercial enterprises where raw material is converted into a marketable product, rely to a considerable degree on their by-products to pay dividends. What more profitable by-product has the farmer than the hen?

—O—

A little judicious feeding of the poultry flocks of Kansas would yield as much profit to the farmers as has been realized from the culling campaign conducted by the College for the past two years.

—O—

It has been estimated that the culling demonstrations carried on by the Extension Division of the Kansas State Agricultural College in 1920 saved the farmers of the state one million dollars. It does not pay to feed "star boarder" hens any more than it does to feed "star boarder" cows.

Manhattan Candy Kitchen

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The Development of the Day-old Chick Industry

Percy L. DePuy, '18

From the old setting hen to the mammoth incubator of 1921 is a span of development which has scarcely been equaled by any other branch of agriculture. The large commercial hatcheries of today might well be called baby-chick factories. Some of them turn out thousands, even millions of standardbred chicks in one season.

Anyone wishing to raise a few frys next spring may write to a commercial hatchery for a catalog. With the information at hand the order may be placed for the variety desired and in due course of time the postman will deliver the chicks just as he would a bill of dry goods. In the large cities the five-and-ten-cent stores, as a rule, handle newly-hatched chicks during the proper season. Custom hatching is such a modification of the work of the hatchery as permits the producer to take eggs to the plant and in due time have the hatch delivered. This is practicable within a limited radius.

The day-old chick industry was started 29 years ago, when a Mr. Wilson in New Jersey started shipping chicks through the mails in wooden boxes. People accused him of cruelty to dumb animals, in that his chickens often went a few days while in transit without food. The postal authorities charged him with misuse of the mails when he advertised that he could deliver baby chicks eight hundred miles from the hatching point in good condition. They said that it could not be done and that the man who advertised that he could do it was making fraudulent use of the mails. Mr. Wilson proved that it could be done by doing it.

It was a number of years before any one else tried to produce day-old chicks as a commercial proposition. Then a man in Ohio tried the scheme and found that it worked. After this the commercial hatchery business gradually spread over the entire country, starting in the east and moving westward. There are two chief centers of the industry in the United States at the present time. One is in the Eastern States, where the many large cities create a big demand for poultry products, and the other is in the White Leghorn district around Petaluma, Calif.

The commercial hatcheries in the United States vary in size from small plants with

capacities of a few hundred eggs to the large concerns which incubate hundreds of thousands of eggs at one time. The largest plant in the country is located in Cleveland, Ohio. It can handle over one million eggs every three weeks. The second largest plant is at Pasadena, Calif., and has a capacity of about 700,000 eggs. There is no state in the Union that does not have some one who is producing baby chicks to sell. Even in Kansas, where poultry is considered a by-product of other forms of agriculture, there is a hatchery in practically every county. The largest one in the state is at Leon and has a capacity of 70,000 eggs.

When Mr. Wilson first started to hatch chicks to sell he had to build his own incubators. There were none on the market at that time. The first machines were small and crude. They were heated by kerosene lamps which gave off evil-smelling vapors that were not conducive to good hatches. The ventilation in these machines was very poor. The temperature was apt to fluctuate widely. Thus, these early machines required constant care and even then did not always produce satisfactory results.

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size and efficiency since that time. Now huge machines are heated by electricity or furnaces. Where furnaces are used, the heat is conveyed to the egg chambers by means of hot water or hot air.

The large Smith Standard Hatchery (the one spoken of as the largest in the United States) is composed of fourteen compartments or rooms, each with a capacity of 73,920 eggs. Thus, the plant can handle 1,034,880 eggs at one time. The eggs are placed on trays. These trays are then fastened to endless chains which run from the top of the room to the bottom. The chain is moved a few inches each day so that a tray will travel from the top to the bottom of the room in three weeks. One day the trays are tilted in one direction and the next day in the opposite direction. This tilting has the effect of turning the eggs each day. The trays on one chain form a movable column. Each day trays of fresh eggs are put in at the top of the column and trays of chicks are taken out at the bottom.

The compartments of this large incubator are heated by blasts of warm air which are forced upward through the trays of eggs at a high velocity by electric fans. Thus the heat is regulated and ventilation accomplished. During late spring and early summer the developing chicks in the eggs at the bottoms of the columns furnish all of the heat that is required to incubate the eggs. This is possible where there are thousands of eggs in one room. The plant certainly resembles a chicken factory.

When the first chicks were sent long distances through the mails, people complained that it was cruel to allow the little creatures to go so long without food. Later it was discovered that these mail-order chicks thrive better than the home-raised ones, the reason being that the developing embryo does not use all of the food stored in the egg but reserves some to tide the chick over the first few days of life. Any feed given the chick before this reserve is used up is not only superfluous but detrimental to health. Home hatched chicks were usually fed from the start. It is this reserve food in the new-born chick's body that makes the day-old chick business possible.

Queen bees and baby chicks are the only live animals which can be sent through the United States mails. The postal employees

are instructed to pay particular attention to the comfort of their little passengers and to rush them through to their destinations. The pioneers of the industry mailed their chicks in wooden boxes. Light pasteboard cartoons with holes in the sides for ventilation are now used.

The baby-chick industry is simply one of the specialized branches into which modern agriculture is breaking up. It is taking some of the drudgery out of farm life and will perhaps make the country more attractive to the better class of young people who are now growing up on the farms. Furthermore, the owner and manager of a large hatchery, while he may be classed as a farmer, is comparable to the head of a manufacturing concern in the ability required of him and the income that he can make. The Smith Standard Hatchery at Cleveland sold \$400,000 worth of baby chicks in 1920.

The baby-chick business has come to stay. It has grown rapidly, is now growing, and competent authorities predict that it will continue to grow. Poultry always has a large place as a by-product in systems of intensive agriculture and our agriculture is becoming more intensive as our population increases. American farmers will come more to depend upon the hen for part of their incomes and they will be too busy to hatch their own chicks.

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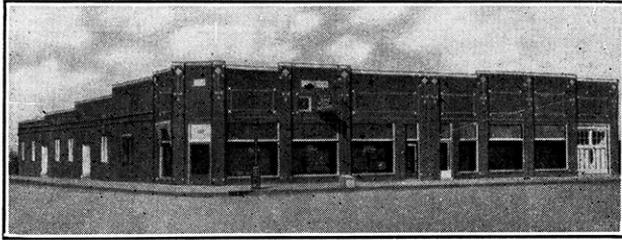
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