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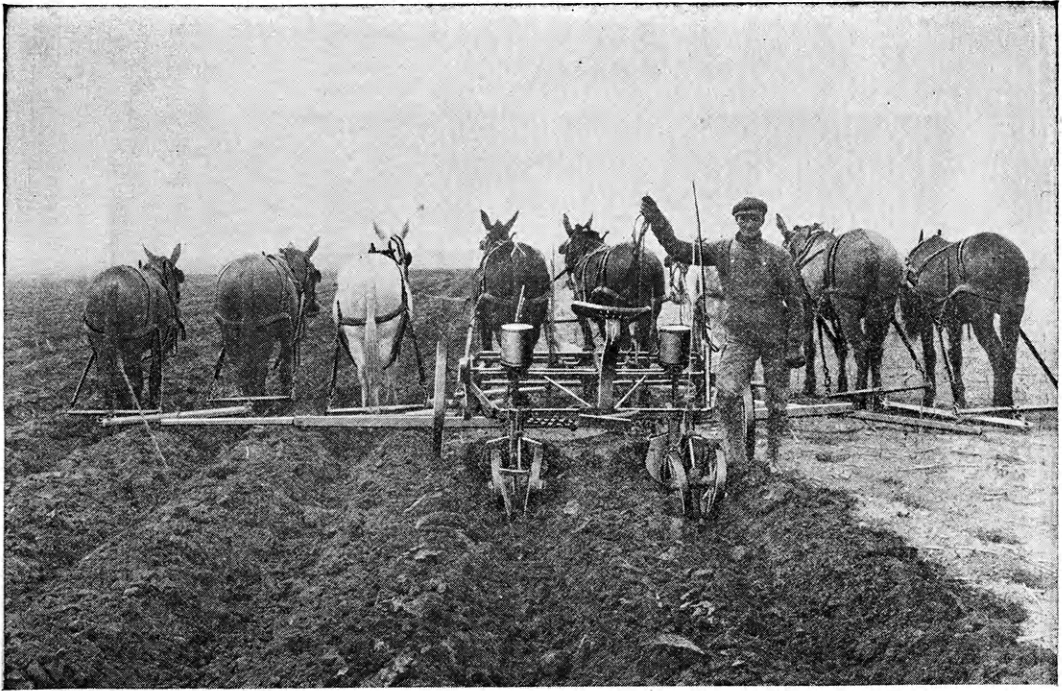
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Horticultural Hall, K. S. A. C.

The Kansas Agricultural Student

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NO. 3

Selecting Seed Corn from the Crib

H. H. Laude, '11

Selection of seed corn is practiced for the purpose of increasing the yield or improving the succeeding crop in other respects. Experience has shown the importance of giving careful attention to the type of plant that produces the seed ear. Normal maturity of the entire plant is preferable to extremely early or late maturity; strong, sturdy, erect plants are to be desired over slender, weak, or lodged stalks; uniformity in height of stalk and ear is preferable to a mixture of tall and short parent plants. These and other plant characters can be taken into consideration only when selection of seed corn is made from the field in the fall and therefore this is superior to any other method.

As a matter of fact a comparatively small portion of seed corn is field selected. Because of the rush of fall work and the fact that the next planting season is several months in the future it is easy to delay selection of seed. Consequently most of the seed corn is picked from the crib during the winter or shortly before planting time. It is possible in most seasons to pick good seed corn from the crib. Where the corn matured well before frost and remained standing without damage by weather until it was harvested it is not difficult to pick from the crib desirable ears of high germination.

Last fall, however, conditions were exceptionally unfavorable for the proper development of corn for seed due to slow maturity and early hard freezes. More than half the corn in many cribs will not grow this spring. Seed may be selected safely from a crib of corn that tests over 90 percent in germination, but if the average germination is lower than this it should not be used unless the individual ears are tested. It is not safe this spring to plant corn without first testing it for germination..

In selecting seed corn the ears should be examined individually for soundness, type, and

purity. Sound, solid, heavy, well-matured ears with bright glossy kernels are most desirable. Ears with loose kernels or weak cobs should not be considered regardless of any desirable characters they may possess. Shredded shanks, moldy or weather-damaged kernels are seriously objectionable. The ears selected for seed should be uniform in type representing the particular variety. Extremely rough indentation is objectionable, in fact the smoother types generally produce higher yields in Kansas.

Purity is an important consideration in the selection or choice of any kind of seed. White-cobbed ears in a red-cobbed variety, or the reverse, should be discarded. Crossed kernels, where they can be observed, may be picked out if the number is not large. The purity of individual kernels, however, is a difficult matter to handle, and can best be controlled by selecting seed only from corn that was grown more than 40 rods from another variety.

It is desirable to remove the large and irregular-shaped kernels from the butts and the small kernels from the tips before shelling the remainder of the ear. Grading the shelled corn aids further in obtaining kernels of uniform size and shape and, therefore, in securing more even distribution through the planter.

In conclusion it must be remembered that the selection of seed corn from the crib precludes the possibility of observing plant characters and, therefore, cannot be considered equal to field selection. However, since by far the larger portion of seed corn is selected from the crib it is important that the points briefly discussed above be fully understood and carefully applied in the selection. Germination is of primary importance since the first essential of seed is the ability to grow. Other factors such as soundness, type, purity, and condition can be and should be given adequate consideration in the selection of each ear of seed corn from the crib.

The Hawaiian Station Promotes Fruit Growing

Fred W. Schultz, '26

The United States Agricultural Experiment Station in tropical Hawaii is a place of intense activity and real work. It is situated on the side of an extinct volcano known as "The Punchbowl," just on the outskirts of the city of Honolulu. However, there are substations at other locations and on various islands to promote work adapted to all conditions on the islands. A surprising amount of work is done by co-operating with willing and enthusiastic growers. The leading purposes of the work are to improve the native plants; to introduce new plants which will be of economic importance and value to the islands; to propagate and distribute new and improved varieties of plants; and to disseminate useful information gained through observations and experiments, on the best cultural methods to use in growing the more important crops of the islands.

This work is being done very efficiently under the directorship of Mr. J. M. Westgate, who is a graduate of K. S. A. C. Mr. Willis T. Pope, the horticulturalist, who has charge of the work which has to do particularly with the fruit plants, is also an Aggie graduate.

The growing of sugar cane has long been the chief agricultural industry on the islands and it still plays the leading role in Hawaiian agriculture. However, the sugar industry has grown to be such a large commercial enterprise that its supporters find it profitable to finance private investigations. The industry has benefited so largely from these investigations that at present it has a staff for field tests and chemists for laboratory investigations, whose efficiency is so marked that governmental work along these lines has been discontinued.

The pineapple, said to be crowned by nature the king of fruits, will grow on the higher, drier land above that best suited for the growth of sugar cane. Because the Mediterranean fruit fly is a pest that would cause a terrible loss to fruit industries in the States were it ever introduced, all fresh fruit leaving

the islands must be inspected to insure against stings of this fly. For this reason it has been rather difficult for the Hawaiians to build up a market for their fresh pineapples. They must pay the costs of inspection and transportation and compete with the Florida-grown pineapples. However, when a small cannery was opened on the islands a practical way was found of reaching the market and doing away with the necessity of inspection. Hence during recent years the growth of the pineapple industry on the islands has been so rapid and steady that it seems destined soon to surpass the sugar industry in importance. The small cannery of the Hawaiian Pineapple Corporation has grown to an immense size and there are now two other commercial canneries in competition. The pineapple industry may be said to be well established and standing on its own feet, at least the different commercial concerns deem it necessary to establish experimental and investigational phases of the work much as the sugar industry has done in order that the work may be carried into greater detail than would be provided by governmental agencies.

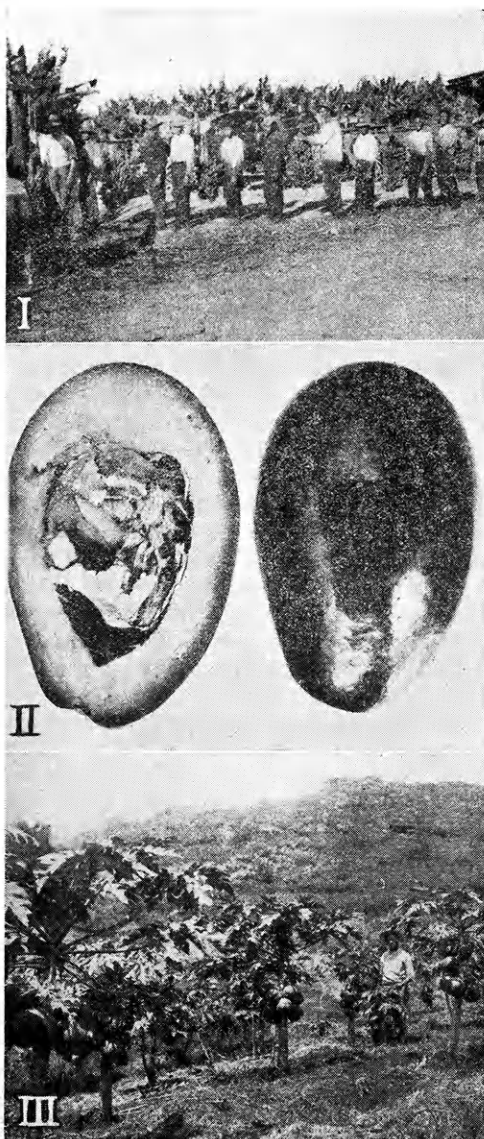
Several years ago one of the new-rich type of American women tourists was being driven about Honolulu in one of the sight-seeing cars. It happened that they passed one of the Hawaiian school houses as the children were out in the yard playing and singing during recess. The American tourist had the guide stop so that she might enjoy to better advantage the strains of Hawaiian music in its natural state. When the children had finished one song that they all sang rather lustily she exclaimed that it was wonderful how these children could sing so well and asked the guide the name of their folk song. He replied, "Yes, We Have No Bananas!" However, the sentiment of the song is decidedly out of place in Honolulu.

There are in the islands hundreds of acres of land, not suitable to the growth of sugar cane or pineapples, that are well adapted to the growing of bananas. As a result of the

work of the Agricultural Experiment Station this area is rapidly being utilized by the banana industry. Recent experiments have proved that the banana is not attacked by the Mediterranean fruit fly, hence this fruit may be shipped fresh without such a thorough preliminary inspection as is necessary with other exported fresh fruits. Many varieties of bananas are grown on the islands, but those which seem to be the best adapted to conditions there and which can get into the trade of the coastal states without much difficulty are the Chinese and Cavandish varieties. The market for the Brazilian banana is almost monopolized by the company shipping bananas from Mexico and Central America.

The banana plant is a succulent mass of leaf sheaths bearing the fruit from a stalk in the center which recurves after fertilization and with the maturity of the fruit so that the bananas are borne on one stem of an inverted U, the plant being the other stem. At harvest time these large stalks are cut so that the curved portion of the stalk is taken with the bunch and acts as a handle for carrying or moving it. The bunches, hung from a stick across the shoulders of two men, are carried into the gallows. Here they are washed and wrapped in the leaves of the banana plant. Each plant produces only one bunch of bananas so it does no harm to use all the leaves to wrap the bunch. Each plant will, however, produce several suckers and these are removed with care and planted where a new plant is desired. It requires approximately eighteen months for a young sucker to mature fruit. However, as it is sending out suckers as well as maturing fruit at the same time, a banana grove is not such a temporary plantation as might at first be thought for as soon as the first plant has matured its fruit a sucker from the crown quickly replaces it.

The avocado is a slow-growing woody tree, the fruit of which is very high in fat content and nutritive value. This fruit is often called "Alligator Pear" in American cities and some of the hotels, although there seems to be no correlation between the name and the fruit except that certain varieties are somewhat pear shaped and may have a rough skin. The flesh of the fruit when ripe is a rich creamy yellow and, in varieties of good quality, of about the consistency of good spreading butter.



Native Hawaiian Fruit

I. Laborers carrying bananas to the gallows to be washed. II. An avocado of good quality showing cross-section of fruit. III. Papaya on the trees.

The station with the aid of certain pioneer growers is attempting to develop better varieties and increase the plantings of the avocado on the islands, with the result that there are now several large avocado orchards coming into bearing.

In Central America fruit of the avocado is

used as a substitute for meat. In the United States it is extensively used in the preparation of high-grade salads and salad oils. It often sells for as much as 80 cents per pound on the city markets. The skin of the fruit is very tough and leathery. To secure the flesh, the fruit is usually halved and the large seed, which is about one-fifth the size of the fruit, removed. The flesh is then scraped out of the husk much as the starch is removed from a baked potato.

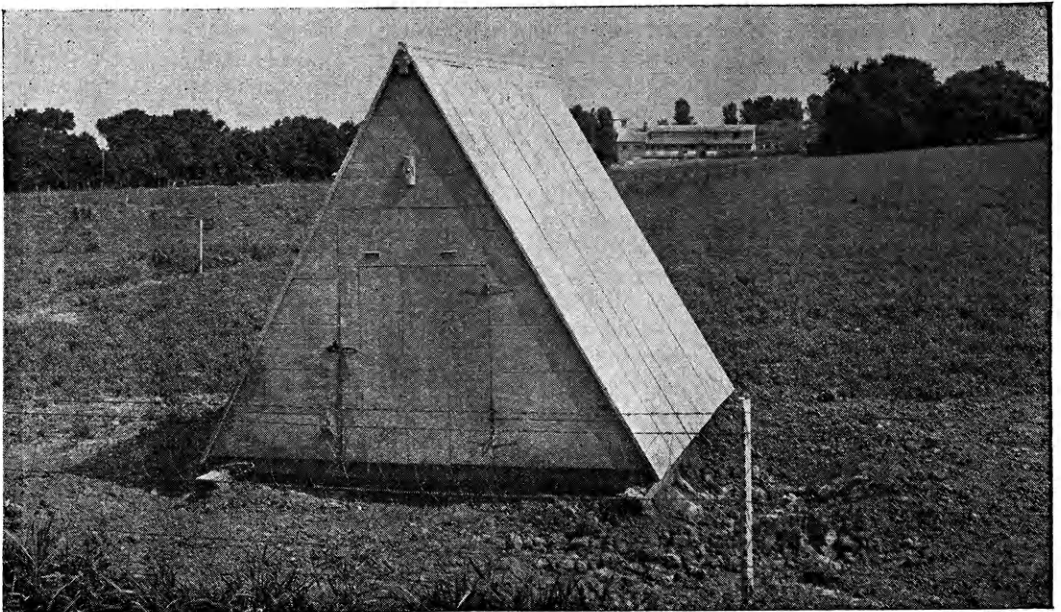
One of the most pleasing and deliciously flavored fruits of the Hawaiian Island is the papaya. This melon-like fruit grows on trees, attached by short stalks to the main trunk of the tree in the axil of each leaf. The fruit itself very much resembles a smooth green-skinned muskmelon. The skin is thin, however, as compared to a melon. The flesh is a deep yellow or orange in color and very juicy. The small, black seeds are attached to the flesh in much the same way as melon seeds except that papaya seeds look like rows of scattered buckshot on the flesh of the fruit. The fruit of the papaya has a very pleasing flavor and is used a great deal as a breakfast food. The

fruits are usually halved, the seeds removed, and the edible portion served with a slice of lemon. The papaya is also much used with other fruits in preparing fruit salads and desserts.

This fruit has well established varieties and is reproduced for the most part from seed. It is the aim of the station to develop and standardize a variety of fruit which is uniform in shape, symmetry, and smoothness, has a rich yellow or orange flesh, a sweet spicy highly palatable flavor, and good keeping qualities. The trees when grown from seedlings usually start bearing at nine months or a year of age and at that time are not over six or seven feet tall. The best quality of fruit is produced on these young trees. As the tree grows older the fruit is poorer in quality so, by the time the trees get too tall to reach the fruit from the ground, they are usually cut down and others planted in their stead.

As most of the good varieties of papayas are dioecious, i. e., bear the male and female flowers on separate plants, there is the factor of chance that a grower may plant too many

(Continued on page 81)



Movable Farrowing House

Round worms and other filth-borne diseases exact a tremendous toll on hog profits each year. Old hog lots and colony houses that are difficult to clean are ideal breeding places for filth-borne diseases. The litters from sows that have farrowed in individual houses on clean pastures such as pictured above, will usually be more uniform and vigorous than litters farrowed in centralized hog houses.

The Selection of Brood Sows

Ward W. Taylor, '26

The wise selection of brood sows is an important factor in the production of market pork. In fact the selection of sows of poor type may not only reduce profits, but be disastrous to the business. A cost of production experiment carried on by the Department of Animal Husbandry of the Agricultural Experiment Station in the summer of 1925, furnishes valuable data on the economy of pork production as determined by the kind of brood sows selected.

The two sows selected for the experiment were equally good healthy sows. However, they were of different types. They were fed and cared for together until the weaning time of their litters. The sows and their litters will be referred to hereafter as No. 1 and No. 2. Sow No. 1 was tall, narrow and shallow-bodied, rather plain in quality and curly-coated. Sow No. 2 was a thicker, deeper-bodied, smoother sow, and an easier-feeding kind. Market prices were used in determining the value of the sows when bred and they were sold on the market 30 days after weaning. Their value when sold was considerably more than when they were started on the test. This was due to the fact that the sows had increased in weight and to the fact that as it happened throw-out sows jumped from \$8.15 to \$11.90 a hundredweight during the seven-month period of the experiment. The cost of feeding the sows for the last 30 days was deducted from the increase in value and the amount credited to the pigs at weaning time. The cost of the litter at weaning time included feed, vaccination charge, and boar service. The profit per litter as used in this discussion means the amount left to pay for labor, pasture, equipment, interest charges, etc.

Both sows farrowed April 1, 1925. Sow No. 1 farrowed nine pigs and saved eight; No. 2 farrowed eleven and saved all of them, but one pig in litter No. 2 died at weaning time. Eighteen pigs were marketed from the two litters. The total feeds fed from breeding, December 8, 1924, until the pigs were weaned, June 18, 1925, for both sows and litters was as follows: Corn, 2,125 pounds; tankage 124.74 pounds; shorts, 972.5 pounds. The total cost

for feed during this period was \$61.80.

The cost of litter No. 1 (eight pigs) at weaning time, was \$23.93, or \$2.98 each. They averaged 40 pounds each, consequently the pigs cost \$7.45 a hundredweight. The eleven pigs in litter No. 2 cost \$22.49, or \$2.04 each, at weaning time. Their average weight was 46 pounds. Therefore, they cost only \$4.43 a hundredweight.

The feed consumed from weaning until the pigs were marketed was as follows: Corn, 33.75 pounds; shorts, 140.22 pounds; tankage, 25.08 pounds. The feed cost per pig was \$9.63, which made a total feed cost from weaning to market for litter No. 1, \$77.04, and for litter No. 2, \$96.30. Both litters sold at \$10.75 a hundredweight. Litter No. 1 sold for \$152.22 and litter No. 2, \$195.65.

The eight pigs were marketed from litter No. 1 at a profit of \$51.25. The ten pigs of litter No. 2 were marketed at a profit of \$76.86, a difference of \$25.61 in favor of the larger litter, raised by the more desirable sow of the two used in the experiment. Moreover the pigs out of sow No. 2 did somewhat better than did those out of No. 1. The eight pigs in No. 1 weighed 33 pounds when a week old, or an average of 4.1 pounds a pig, while the eleven pigs in litter No. 2 weighed 65 pounds, or an average of almost 6 pounds a pig. The pigs in litter No. 1 averaged 40 pounds at weaning time and 177 pounds when marketed as against 45 pounds and 182 pounds, respectively, for the pigs in litter No. 2. The pigs in litter No. 2 were fatter and in somewhat better market condition than the pigs in litter No. 1. It was further noted that the more desirable sow, No. 2, made more rapid gains than did No. 1 and was in better market condition at the time they were marketed.

Too often, especially in times of high market values for hogs, brood sows are bought or retained in the brooding herd that should have been culled out and shipped to market. With sows that have farrowed, culling is fairly easily and accurately done by referring to their past performance and selecting smooth,

(Continued on page 81)

Large-Scale Farming

B. H. Luebke, M. S., '26

America is getting to be a billion dollar country. Already fourteen corporations have assets exceeding a billion dollars each. The sales of Ford Motors Company will run close to a billion dollars this year, as will also the sales of the United States Steel Corporation, the Metropolitan Life Insurance Company, and the two largest packing plants of the country. The economies resulting from large-scale operation have resulted in a combination of small units into large units under a corporate form of organization. The small concerns give way to large units.

Unlike other industries the units of agricultural production remain small, considering the development of farm machinery. Will man ever overcome the obstacles imposed by nature in agriculture as he has done in the factory? Will he ever combine the small units into larger and larger units, as has been done in the big industries of transportation, meat packing, and motor manufacture?

The efficiency of large farms in certain types of agriculture suggests that there is a possibility in larger units. On the bonanza wheat farms in semi-arid regions, where the cheap and virgin land permits of a one-crop system, power machinery makes extensive operations profitable. Sugar, rice, and cotton plantations are successful; and often large-scale nurseries, seed farms, and fruit and truck farms are prominent successes. Spraying by aeroplane, although still in the experimental stage, certainly will demand large areas.

Corporation farming has long been known in the United States. No records are available showing what percent of such corporations fail and what percent succeed. An increasing number of railroad and industrial corporations are now operating large farms for experimental purposes. A general manager supervises these farms, using up-to-date business methods in developing farm properties.

Cooperative agricultural production is being attempted by the English Cooperative Wholesale Society. The experiments have not been encouraging so far. The cultivation of 14,500 acres held in 1916 yielded profits of

8,863 pounds and a loss of 5,865 pounds, leaving a net balance of 2,998 pounds profit, which for a capital of 427,000 pounds only represents three-fourths of 1 percent. Projects have been formed, such as the purchase of 100,000 acres in Canada and 25,000 acres of tea plantations in Ceylon. The Society already has eight tea plantations in Ceylon and India, with a total area of 18,000 acres. A forest of palm trees in West Africa furnish the supply of raw material for making soap.

In farming there are two discernible tendencies, the one toward specialization on the large farm, the other toward diversification on the small farm.

Large-scale operation has the following advantages. (1) The efficient large-sized farm machines are most economical when the acreage under cultivation is large enough to warrant their use. Under those conditions it costs less to produce a crop. Although the small farm does not have sufficient machinery to do the work advantageously, the machinery cost per acre on the small farm is much higher than on the large farm. (2) A large business permits greater efficiency in the use of man labor, horse labor, and farm buildings. Combined with these facts there seems to be little or no decrease in yields per acre. On small farms, although the receipts per acre are higher the labor cost is also higher. (3) Expense items such as fencing are less on a large farm. (4) Buying and selling are conducted to a greater advantage on a large farm.

The unit area of most efficient operation varies from region to region and within regions—depending upon the diversity and intensity of the farm business. In Australia the 300-acre wheat farm has proved too small. In Dakota, the 7,000-acre wheat farm has proved too large.

Farm studies show that the larger sizes of farm business tend to bring the greater net return. With given farm equipment an increased acreage should bring increasing returns up to the point where the operator could get the most complete utilization of that equipment. But, with equipment as no limiting factor, an increase in size can not be carried far

until the point of diminishing returns is reached. The natural obstacles soon become unsurmountable, such as the area to be covered; the variability of the geographical and climatical factors, which are beyond the control of man; and the variety of work, with its multitudinous details.

Managerial ability is limited. The manager must give less and less attention to details as his scope of attention enlarges and more and more must be left to the hired man. The hired man has not the interest in the work to be conscientious in the execution of the details, which are very essential to successful farming. He will not give intense application and personal interest to the work without adequate supervision.

The economy of labor is cut down by the loss of time going to and from distant fields; the loss of time in shifting from one task to another; and the difficulty in employing large gangs of men on stormy days, or when machinery breaks down. All these things tend to reduce the efficiency on the very large farm. The small diversified farm with a small overhead investment is more adaptable to changing market conditions. It can more easily withstand the losses due to depressions. The large farm is handicapped by a large fixed investment in a specialized enterprise. The efficiency of this large overhead depends upon its being worked to capacity from year to year.

The effect of combination in agriculture on the social life of the community would be hard to predict. However, the effect of present bonanza farms may be some indicator of what may follow in the wake of larger and larger systems of operation. Prominent bonanza farm operators and bankers testified before the Industrial Commission in 1901 that the effect of bonanza farming was not good. If carried too far after the population gets more dense it will keep thousands of men from owning homes of their own. The bonanza farms are divided up into different parts with a foreman for each part. Each has a village of its own. The hired help are usually single men and not of the best type. The soil is abused and then goes to other people to be built up by careful rotation, stock farming, and tillage. The bonanza farms are owned by men who spend their money in the cities or in other states. They impair and disorganize the

public schools and detract much from the social life of the country.

The most desirable unit for ownership and operation both from the individual and social standpoint is that size of farm business which can be cared for by a family. Where one man can manage or direct the labor of others wisely, there are ten men who can direct their own labor wisely. The man on his own farm will give that close application and personal interest upon which the success of the farm operations depends. The family is an economic unit. Children in a farm home are an economic asset to the farm and the farm in turn contributes to the family living by supplying vegetables, eggs and meat, without interfering with the major operations of the farm. There is an incentive to conserve and build up the fertility and improvements, with a view to high yields over a long period. Diversification and intensification are encouraged. The profits of farming are distributed among a large number of operators and where they will do the most good toward building up those institutions that make rural community life worth while—the home, the school, and the church.

R. S. Kifer, '23, on leave from the United States Bureau of Economics, is taking graduate work in the University of Minnesota.

Gladwin A. Read, '25, has resigned as graduate assistant in the University of California and accepted a position in the Petaluma Hatchery (Petaluma, Calif). This hatchery is in the heart of one of the largest egg-producing regions in the United States.

F. M. Wadley, 16, entomologist in the United States Department of Agriculture, has been taking work towards a master's degree at the University of Minnesota.

R. L. Anderes, '25, is now salesman in the Butterine Department of Armour and Company, with headquarters in Kansas City

Merton L. Otto, '21, farming near Riley, reports the arrival of a baby boy in his home. K. S. A. C. football prospects are brightening. Baby boys have also arrived in the homes of J. F. T. Mostert, '23, Potchefstroom, Union of South Africa, and A. C. Magee, '24, Canadian, Tex.

Sam Pickard, '23, is chief of the Radio Service for the United States Department of Agriculture.

Sudan Grass and Kafir in Pork Production

Sheridan Settler, '26

A very interesting experiment in pork production was conducted by A. D. Weber of the Agricultural Experiment Station last summer. The object of the work was to determine whether kafir and Sudan grass make satisfactory substitutes for corn and alfalfa in the economical production of pork. This problem has a very important bearing on Kansas hog raising, as in many sections of the state corn and alfalfa either cannot be grown or are not dependable crops and, as a rule, both kafir and Sudan grass are well adapted to these sections of the state.

The experiment was conducted as follows:

A bunch of 30 pigs was divided into lots of 15 pigs each. They were divided so as to be fairly uniform in size, condition, type, and breeding. From June 15 until September 28, 1925, (105 days) one lot was turned on Sudan grass pasture and fed ground kafir and tankage. The accompanying table shows the results in detail. It will be noted that these pigs made an average daily gain of 1.33 pounds, each pig consuming an average daily ration of 4.73 pounds of ground kafir and 0.23 of a pound of tankage.

From June 23 until October 6, 1925, (105 days) the other lot was fed corn and tankage on alfalfa pasture. They made an average daily gain of 1.47 pounds, each pig consuming an average daily ration of 5.03 pounds of corn and 0.2 of a pound of tankage. Both the kafir

and the corn were self fed, while the tankage was hand fed. One-half acre of Sudan grass carried as many pigs as one acre of alfalfa.

The experiment showed ground kafir and Sudan grass to be good substitutes for corn and alfalfa in pork production. Extensive hog raising is certainly possible wherever kafir and Sudan grass can be successfully grown. An extension of the hog-producing area in Kansas on this basis will aid materially in solving the problems of diversification in western Kansas and on many other upland farms where the soil is depleted or poor.

MID-YEAR GRADUATES

Ten students of the Division of Agriculture completed the requirements for the degree, bachelor of science in agriculture, the first semester. These men are now located as follows:

Four are pursuing graduate work in K. S.-A. C.: D. N. Donaldson, A. A. Haltom, A. G. Jensen, and R. H. Perrill.

E. R. Honeywell is graduate assistant in vegetable gardening in Iowa State College, Ames.

Four are farming: F. J. Sykes is operating a wheat farm near Brewster. L. B. Harden is engaged in general farming in Nemaha county. G. R. McMahan is managing the poultry department of the Robbins ranch near Belvidere, Kiowa county. The poultry breeding stock on the Robbins ranch now includes about 200 turkey hens and George plans to raise turkeys this spring for carload shipments next fall.

T. M. Kleinenberg has returned to his home near Pietersburg, Transvaal, South Africa, and is engaged in the management of a 50,000-acre farm.

J. H. Hammad, of Nablus, Palestine, majored in agricultural engineering. He has been employed by the Massey-Harris Harvester Company. At the present time he is working in the Assembling Department of their branch house in Kansas City.

Sudan Grass Pasture and Ground Kafir (Lot I) Compared to Alfalfa Pasture and Shelled Corn (Lot II) for Pork Production

	LOT I Pounds	LOT II Pounds
Average initial weight per pig.....	62.04	66.38
Average final weight per pig.....	202.13	220.93
Average total gain per pig.....	140.09	154.55
Average daily gain per pig.....	1.33	1.47
Feed required for 100 pounds gain:		
Ground Kafir	354.44
Corn	341.42
Tankage	17.52	13.18
Average daily ration per pig:		
Ground Kafir	4.73
Corn	5.03
Tankage23	.20
Number of pigs in lot.....	15	15

Taxes, Land Values, and Land Ownership

C. E. Dominy. '62

As net income from land increases the selling value also increases, for the man who buys land does so because he can get returns from it and will count the income as interest on the money invested. Land does not return an income because it is valuable but rather, land is valued because it commands a rent. Since taxes on farm land are deductions from land income and are not shifted by the land owner to other persons, it follows that a smaller net income is left as a result of high taxes, which in turn means lower land values.

Conditions in Kansas seem to bear this out, for taxes on land increased 15 per cent from 1910 to 1923, while the selling value increased only 34 percent,⁽¹⁾ that is, the ratio of taxes to selling value of farm real estate doubled in 14 years.⁽²⁾ If this increase should continue it would be only a few years until the tax burden would equal the annual land income—in 1937, taxes would take 2.48 percent of the sell-

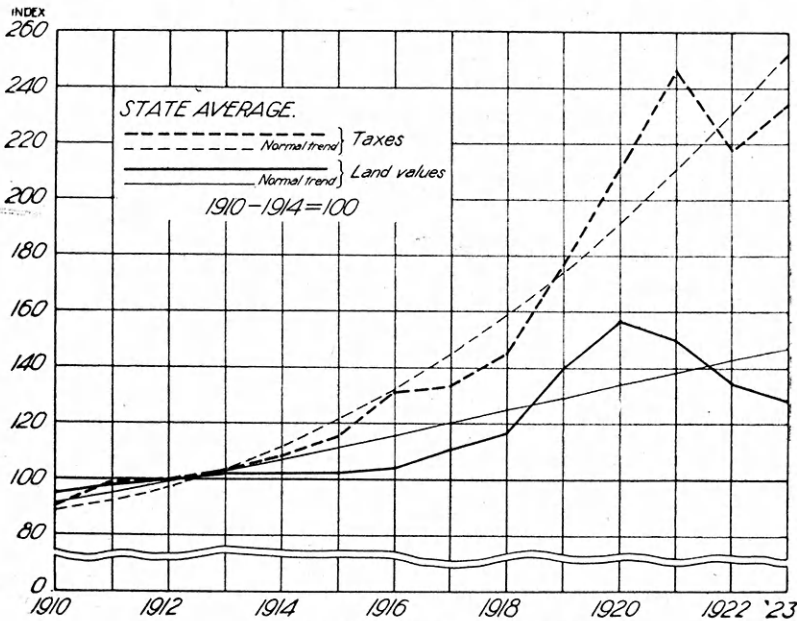
ing value of farm real estate.

Obviously this condition is a disadvantage to present land owners who profit more by low taxes and higher land values. But what about the land owners of the future? The contention might be made that high land values obstruct the ownership of land by the newer generation of farmers, thus increasing tenancy, and causing concentration of land ownership.

A permanent class of farm tenants is not desirable, although a certain percent of tenancy made up of farmers "on their way" to ownership is both unavoidable and desirable. The advance of the science of agriculture is

1. Englund, Eric. The Trend of Real Estate Taxation in Kansas from 1910 to 1923. Kan. Agr. Expt. Sta. Bul. 235:1-97. References: Table IX, p. 21; Table XXXII, p. 81.

2. On the basis of the 1910 to 1914 average, taxes and land values increased 134 percent and 28 percent, respectively, as shown in the accompanying chart.



Trends of Taxes and Land Values

These graphs show the average trend of taxes and of selling values per acre of all taxable land and improvements in Kansas, based on percent of the 1910 to 1914 average.

causing the beneficial effect of ownership to increase. The man who owns his land has a permanent home which makes him much more stable than the renter; he would work harder and more wisely, and will take more pride in his work; he will be conscious of a lasting benefit to be received from improvements in the character of his farming and that poor work or harmful methods will have a permanent effect in lessening the productivity of his labor and of his land in the future.

But during the past 25 years, when the ratio of taxes to selling values has increased so greatly, no great change has been made in tenancy. The percent of farmers of the United States who were tenants was:

1900.....	35.3	percent
1910.....	37.0	percent
1920.....	38.1	percent

This increase is insignificant, while strange as it may seem tenancy increased greatly from 1880 to 1900 when there was an abundance of new land available at a low price. The percent of tenancy for this period was:

1880.....	25.6	percent
1890.....	28.4	percent
1900.....	35.3	percent

Even if prices of land were so low that farms could be bought for small amounts of money, the net income would be small in the same proportion as the price of the land and its ownership would mean little. If taxes should wipe out land values by taking all the income from land, would not all farmers be in reality tenants of a great landlord, the State? Also if farms are to be paid for out of their earnings and if these earnings are proportional to the valuation of the farm land, it should not be more difficult to pay for a farm in a section where valuations and earnings are uniformly high than in a section where both are low. A study of years spent by landowners as wage earners and tenants seems to show no differences between sections of high valuation and those of low valuation. In the northern states farmers appear to be highly successful in becoming the owners of farms. The percent of tenants over 65 years of age in one study was:

Wisconsin	4.1	percent
Massachusetts	4.3	percent
Illinois	10.0	percent
Nebraska	13.6	percent

This does not hold true in the south where negro farmers are dominant. They have been on their way "up from slavery" only about half a century, and to them tenancy is a milestone of real progress.

The advantages of low taxes and high land values are not confined alone to the present generation for a large number of farmers acquire their land through inheritance either directly or through marriage.

The contention that land might become concentrated because of high land values cannot be supported in this country for the following reasons: (1) Large capitalists are attracted by more favorable investment possibilities than can be found in farm land. (2) The nature of farming which does not lend itself to large-scale operations. (3) Because of the inheritance laws which, in time as land becomes scarce, might even bring about excessive sub-division. In 1900 over 50 percent of landlords owned only one farm and only about 10 percent owned five farms or more. About the same figures hold true today. Furthermore, the bonanza land holdings based on early grants are gradually being subdivided. Therefore, we need not fear a concentration of land ownership in the hands of a few for many years to come.

Ralph Snyder, '90, is president of the Kansas State Farm Bureau. His office and headquarters are in Manhattan.

P. E. McNall, '14, of the Department of Agricultural Economics of University of Wisconsin, is the co-author of a book on Farm Accounting.

C. C. Cunningham, '03, who is farming near Eldorado, is the president of the Kansas Crop Improvement Association.

Vernon S. Crippen, '20, is in college this semester preparing to teach vocational agriculture.

S. D. Capper, '21, is now county agricultural agent in Riley county with headquarters at Manhattan. Of course David is starting the work off with a boom.

C. D. Tolle, '24, is instructor in the Department of Chemistry in K. S. A. C.

Orville, B. Burtis, '16, Route 1, Manhattan, has recently been made a member of the State Board of Agriculture. Mr. Burtis is the youngest member of the board.

The Story of Three Loaves of Bread

N. N. Weberg, '26

In the business of producing the food of the world, the farmer must take into account not only the job of raising crops but also the job of raising that quality of product that pleases his ultimate customer, the housewife. If "the jelly won't jell" or if the bread won't rise, there must be a reason. The reason does not concern the housewife if she can buy good apples or flour elsewhere. So the farmer must be concerned with quality as well as with quantity. Sometimes a compromise is necessary, for the farmer like all business men is influenced to do the things that are profitable.

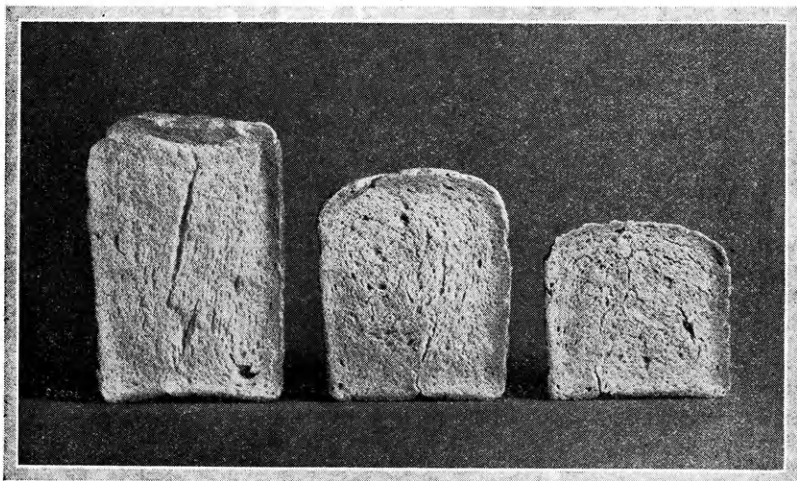
In the production of wheat, land, labor, and capital are used. Management is included with labor. In Kansas there is plenty of land to use for wheat production, so in order to produce wheat more cheaply, the other factors of production must be cut down as much as possible. Labor is the more expensive of the remaining two factors, so labor must be cut down even if more capital has to be used. This is exactly what farmers in the West are doing in harvesting wheat—they are using "combines" in an ever increasing number. While the use of the combine has brought about cheaper production of wheat, there have been some years in which the flour made from

wheat harvested with the combine has produced an inferior loaf of bread—a loaf that was smaller and of poor color, texture and flavor.

Prof. R. M. Green, of the Department of Agricultural Economics, and H. I. Richards, of the Food Research Institute, Stanford University, have been conducting some experiments in Stafford county with wheat harvested by the combine, in an effort to remedy this condition. It was agreed that the wheat acquired this quality while in storage.

Their method was carefully planned and thorough. They took samples of wheat at the time the grain was being binned and placed each sample of wheat in a thin porous sack. From the sack sample a portion for making a moisture test was drawn. The remainder of the sack sample was then weighed and buried in the bin of wheat from which it was drawn. Samples were placed at varying depths in the wheat bins and allowed to remain there until the wheat from that bin was hauled out. The samples were then weighed out and another portion drawn for a second moisture test. Temperatures of wheat in the bins were taken at various intervals. Milling samples were also

(Continued on page 96)



The Three Loaves of Bread

Wheat of good strength and quality was used in the largest loaf. The others show the effect of larger and larger proportions of bin-burned wheat.

The Relation of Engineering to Agriculture*

Roy Bainer, *Agr. Engrg.*, '26

The adoption of labor-saving machinery made possible by the extensive use of power, has been universally acknowledged as the outstanding feature of American agriculture during the past three-fourths of a century. The average agricultural worker 75 years ago could care for but 12 acres of crops; today, considering the United States as a whole, he can tend 34 acres. In some states where large power units are common, the average is more than 100 acres, while on many individual farms it runs as high as 300 acres. At the same time the hours of the farm worker have been considerably shortened thereby eliminating much of the drudgery and monotony of farm work.

The increased efficiency in accomplishing farm work has greatly enhanced returns from farming and has released large numbers of workers to take up other industries. This has resulted in a greater production and a lower cost of comforts and luxuries, the enjoyment of which largely determines the standard of living.

The total primary horse-power available for use by agricultural workers is greater than that found in all of the manufacturing plants of our land, and is second only to the railroads. We have on the six and one-half million farms of our land, upwards of fifty million available primary horse-power from which our farmers utilize sixteen billion horse-power hours of energy annually, estimated to cost at prevailing prices, about three billion dollars each year.

The importance of power in farming is continually increasing. It is estimated that power and labor together represent about 60 percent of the total cost of carrying on the farm business. This cost of production is under the direct control of the farmer, while other costs, which include the cost of land, taxes, insur-

ance, and other similar factors, are, for the most part, largely beyond the direct control of the individual farmer.

In connection with the use of energy in agricultural production it is interesting to note that during the past 30 years the increase in primary animal horse-power in agriculture has been practically nothing and in fact shows a decided tendency toward a decline at the present time. On the other hand 30 years ago mechanical power made up not more than 5 percent of the total primary horse-power available on farms, while today mechanical power exceeds the animal power in the total primary horse-power units by nearly 50 percent. This comparison moreover does not include the automobile which is used extensively by farming people.

The fundamental power demands in agriculture are simple and may be expressed in two words: Economic power. So far as the engineer is concerned he is not interested in any particular form of power so long as the power used is best adapted to the operation and is the type of power that can be most economically applied. Animal power is apparently considered an economical form of power for many farm operations, otherwise millions of such units would not be supported by agriculture. But this does not mean that animal power will always maintain such leadership in the form of energy for agricultural operations. During the past 30 years, however, the growing competition of mechanical power with animal power has brought forth noteworthy improvements in the efficient application of animal power to farm operations.

Mechanical power units have gone through almost unbelievable changes since their first use in agriculture. For example, compare the stationary engine of 20 years ago with the stationary engine of today. Even 15 years have made remarkable changes in the gas tractor. The high-tension ignition system, the high-pressure oiling system, and the enclosure of work-

(Continued on page 92)

*The content of this article is taken in part from Department Bulletin No. 1348 of the United States Department of Agriculture, "An Appraisal of Power Used on Farms in the United States," by C. D. Kinsman, Agricultural Engineer, Bureau of Public Roads.

Rotations for the Brooding Range

W. J. Kraus, '26

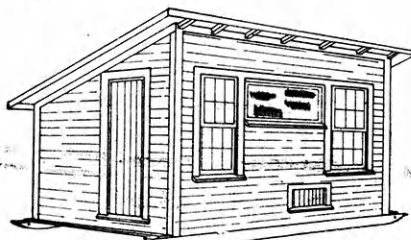
The practical poultryman is usually careful about selecting hatching eggs from strong, healthy, vigorous stock; careful about hatching these eggs in order to have the best chicks possible delivered to his brooder house; and careful about having his brooder house cleaned, disinfected, and ready for the newly hatched chicks. Chicks so hatched from selected eggs, according to modern methods, and then given a chance in clean living quarters are starting their life under favorable conditions.

Chicks are successfully raised under experimental conditions in the absence of direct sunlight, by the use of a small percent of cod-liver oil in their ration, or by a short, daily, direct application of ultraviolet light. For the practical poultryman, however, where chicks are brooded from March 1, on and throughout the summer, some system of brooding must be arranged that will afford the chicks plenty of direct sunlight. Turning them out each day, giving them free range with the rest of the farm flock will not do, since this often results in a high mortality from infectious diseases as well as lowered vitality and lowered resistance, if not death, from parasitic infestations.

Undoubtedly, the best method of brooding young chicks is by isolating them from the mature farm flock. A continuous brooding range, or one on which chicks are brooded year after year, brings back many of the faults of unlimited free range. The soil of such a range is sure to become contaminated within a period of a few years with disease-producing and parasitic organisms. For example, the parasitic roundworm, if present in any individual or individuals, will by means of the eggs in the droppings contaminate the soil and thus pave the way for a worm infestation. In a like manner coccidiosis, a serious disease of chicks between the age of ten days and fourteen weeks, is spread by healthy chicks eating the parasitic protozoan organism which causes the disease. The common cecum worm, which is prevalent among farm flocks, is thought to act as a host to the organism causing coccidiosis. These examples indicate the necessity of a rotation for the brooding range in order that

each portion of the range be periodically free of chicks, so that any infectious or parasitic organisms living over in the soil formerly occupied by the chicks, may be acted upon and killed by direct sunlight and weather conditions.

The primary objective of the brooding range rotation should involve the greatest degree of control of those diseases ordinarily affecting the growing chick. The secondary objectives, which are also of great importance, include: An abundant supply of succulent green feed, available at the time the chicks are put on that portion of the range; a cropping system that will utilize the soil nutrients most efficiently; and a rotation that will net the greatest returns.



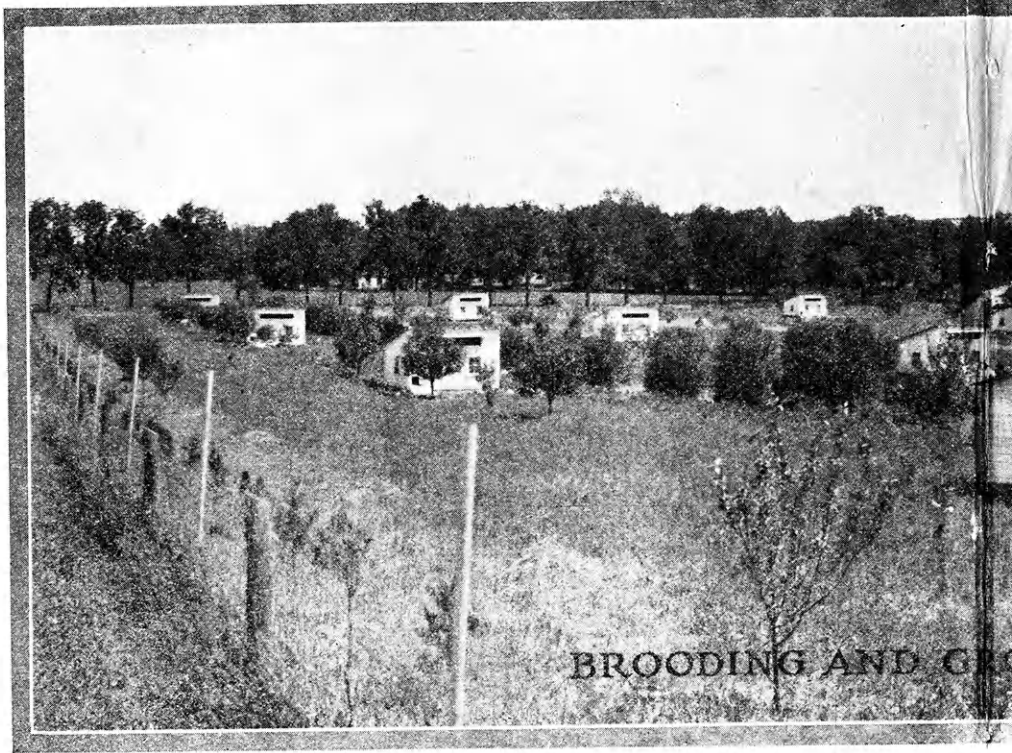
Drawing of Portable Brooder House
This house is 10 feet by 12 feet. It is not inconvenient to move and will accommodate 350 chicks.

The rotation system used on the K. S. A. C. poultry farm consists of three separate ranges each of which is occupied for two years in succession by portable brooder houses. The rotation provides good alfalfa pasture for the chicks as shown by the following outline of the system:

Year	Range 1	Range 2	Range 3
1st	Alf. & Chicks	Wheat & Alf.	Corn
2nd	Alf. & Chicks	Alfalfa	Wheat
3rd	Corn	Alf. & Chicks	Wheat & Alf.
4th	Wheat	Alf. & Chicks	Alfalfa
5th	Wheat & Alf.	Corn	Alf. & Chicks
6th	Alfalfa	Wheat	Alf. & Chicks

This system can be used anywhere that the three crops, corn, wheat and alfalfa are grown.

The effectiveness of this system can be more fully seen by following one of the ranges through the course of the six years: The first



Brooding Range on the Poultry Farm of K

and second years, for example, have alfalfa and chicks on range No. 1. This offers the chicks plenty of nutritious green feed as well as plenty of shade. After the second year of alfalfa and chicks, the ground is plowed and prepared for the planting of corn in the spring of the third year. Corn after alfalfa, if weather conditions are favorable, yields a profitable quantity of grain, so the ground is utilized to good advantage. Wheat follows corn, being planted in the fall of the third year to produce a crop the fourth year. Another crop of wheat is grown the fifth year, after which alfalfa is seeded and during the sixth year the alfalfa can be cut and used for hay as seems most advisable.

This system can be followed in Kansas wherever alfalfa can be grown. Without doing serious violence to the principles involved, other crops may be substituted for corn and wheat. The ranges may be reduced to two without great danger. The alfalfa may be given up and still a simple rotation provided

that will apply the principles involved.

The whole rotation scheme, used on the K. S. A. C. poultry farm, works so as to give each range only two of six years for the actual brooding of chicks while during the remaining four years the ground is either idle and exposed to the sun and weather conditions or under some cultivated crop, either of which will cause destruction to most infectious and parasitic organisms living over in the soil. Continuous, sanitary, green range is thus provided for growing chicks; the fencing of the ranges and the moving of the portable brooder houses are not necessarily expensive; when chicks are not on a range, profitable crops are raised and thus the system promotes safe and economic poultry production.

Harry F. Moxley, '25, is county agricultural agent in Labette county.

I. K. Landon, '21, has charge of the five experimental fields of southeastern Kansas. He is located at Parsons, 1717 Morgan St.



Kansas State Agricultural College, 1925

FRUIT GROWING IN HAWAII (Continued from page 70)

male plants. There is no way of determining the sex, until the plants reach blooming age. Hence, the growers preserve all the plants until they blossom and then cut out the excess of male plants. To overcome this loss many growers follow the practice of planting twice as many trees as they need and then cutting out or transplanting the excess of trees.

The United States Agricultural Experiment Station has set hours for distribution. At these times visitors are given seeds, plants, and cuttings which the station has in excess of the needs for experimental purposes. Much work is also being done in the development of citrus fruits, grapes, and various nut trees. The station acts as a starter in the experimental and investigational work and carries out the investigations until the industry has developed to such an extent that it does private investigational work.

THE SELECTION OF BROOD SOWS (Continued from page 71)

deep-bodied, stretchy sows that are an easy-feeding kind. Sow No. 2 in the experiment demonstrated the value of culling. She produced a larger litter. They were thriftier and reached market condition sooner than the pigs of No. 1. The profit from litter No. 2 was \$25 more than from No. 1. Moreover sow No. 2, the more desirable type, made greater gains herself than sow No. 1, the less desirable sow.

H. S. Baird, '11, opened up a \$50,000 dairy plant at Santa Barbara, Calif., recently under the name of "Liberty Dairy Company."

Arthur Doryland, '14, is plant manager for Chaplin Dairy Company of Kansas City, Mo.

L. K. Saum, '18, is teaching vocational agriculture at Emmett, Idaho. He is also interested with his father in a herd of Ayrshire cattle at Gooding, Idaho.

Rotations for the Brooding Range

W. J. Kraus, '26

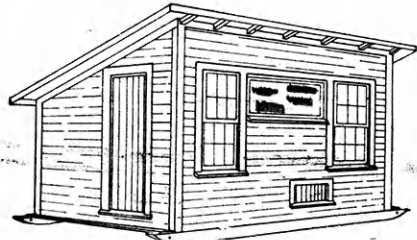
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4th	Wheat	Alf. & Chicks	Alfalfa
5th	Wheat & Alf.	Corn	Alf. & Chicks
6th	Alfalfa	Wheat	Alf. & Chicks

This system can be used anywhere that the three crops, corn, wheat and alfalfa are grown.

The effectiveness of this system can be more fully seen by following one of the ranges through the course of the six years: The first

partments of the Division of Agriculture; namely, the Department of Agricultural Economics, Agronomy, Animal Husbandry, Dairy Husbandry, Horticulture, Milling Industry, or Poultry Husbandry. However, he may also major in any one of several other departments of the college; for example, the Department of Industrial Journalism, Agricultural Engineering, Botany, Bacteriology, Entomology, Zoology, or Chemistry. Moreover, these departments provide not a dozen majors but two or three dozen, for many of the larger departments provide majors having two, three, or four widely separated objectives.

It should be noted also that for certain broad objectives, the teaching of Smith-Hughes or vocational agriculture in high schools, for example, the student may major in any one of two or more departments, being able thus to meet the requirements and still devote considerable time to intensive study along the line of his greatest interest.

Such a curriculum as we have attempted to analyze and describe briefly, is certainly big enough to appeal not to one, or two, or three hundred Kansas high school seniors planning to enter college in the near future, but if fairly understood it is good enough and broad enough to appeal to several hundred such students.

For real inspiring college spirit, for wholesome college life, for democracy among students and teachers, for recognition of scholarship and character wherever manifested, K. S. A. C. cannot be surpassed. Mr. High School Senior about to receive your high school diploma, if K. S. A. C. offers a curriculum in which you are interested, select her for your Alma Mater and you will never regret it. Further, don't fail to understand the curriculum in agriculture. Its breadth, its varied objectives, and its possibilities have only to be understood to present an irresistible appeal to scores, yes hundreds, of the boys being graduated from Kansas high schools this spring.

MEMBERS OF INTERCOLLEGIATE JUDGING TEAMS AWARDED MEDALS

Each year the Agricultural Association awards medals to members of K.S. A. C.'s intercollegiate judging teams. Awards for the present college year were made Thursday evening, March 4. Twenty-eight contestants, including alternates, received this appropriate recog-

nition, the beautiful "K" that any Aggie would be proud to wear. The members of the teams were as follows:

Senior Stock Judging Team		
Name	Address	
Mary E. Haise	Crowley, Colo.	
T. M. Kleinenberg	Pietersburg, South Africa	Transvaal
H. Wayne Rogler	Matfield Green	
A. C. Hoffman	Abilene	
W. H. Atzenweiler	Huron	
Lionel Holm	Vesper	
Prof. F. W. Bell, Coach		
Junior Stock-Judging Team		
Raymond H. Davis	Effingham	
E. F. Carr	Byers	
C. W. Thole	Stafford	
George J. Stewart	Manhattan	
J. H. Johnson	Norton	
Howard Vernon	Oberlin	
Prof. F. W. Bell, Coach		
Apple Judging Team		
Fred P. Eshbaugh	Manhattan	
John H. Shirkey	Madison	
Henry L. Lobenstein	Bonner Springs	
Fred W. Schultz	Wathena	
Prof. R. J. Barnett, Coach		
Dairy Judging Team		
Guy H. Faulconer	Eldorado	
C. W. Thole	Stafford	
Harry A. Rust	Manhattan	
Earl M. Knepp	Clay Center	
Prof. H. W. Cave, Coach		
Grain Judging Team		
S. F. Kollar	Manhattan	
Robert W. Fort	St. John	
E. B. Coffman	Goodland	
G. Ernest Lyness	Walnut	
Prof. J. W. Zahnley, Coach		
Poultry Judging Team		
Stephen M. Raleigh	Clyde	
Albert M. Watson	Osage City	
Walter Wisnicky	Green Bay, Wis.	
Kenneth W. Knechtel	Larned	
Prof. H. H. Steup, Coach		

SECOND SEMESTER SENIOR HONOR ROLL

The first semester record of 15 seniors in the Division of Agriculture placed them on the senior honor roll for the second semester. To win this distinction each student had to make not fewer than 32 points and an average of at least 2 points per credit hour of his first semester assignment. These 15 seniors are:

- W. H. Atzenweiler, Huron
- H. J. Brodrick, Osborne
- Merritt Paul Brooks, Columbus.
- D. N. Donaldson, Fort Collins, Colo.
- Fred P. Eshbaugh, Manhattan
- Guy H. Faulconer, Eldorado
- Mary E. Haise, Crowley, Colo.
- Leonard B. Harden, Centralia
- A. Clair Hoffman, Abilene
- Fred H. Hull, Portis
- Ralph M. Karns, Ada
- Henry L. Lobenstein, Bonner Springs
- H. Wayne Rogler, Matfield Green
- G. K. Terpening, La Pryor, Tex.
- Walter Wisnicky, Green Bay, Wis.

W. H. von Trebra, '24, is assistant superintendent of the branch experiment station at Colby.

J. E. Norton, '25, is county agricultural agent in Meade county.

College Notes

FARM AND HOME WEEK

During the week of February 8 to 13, Kansas State Agricultural College was host to the farmers of Kansas.

Farm and Home Week is an annual event at the institution and has always been the means by which the college has given the Kansas farmers an opportunity to acquaint themselves with the work being done by the college. The interest of farmers in what K. S. A. C. is doing is shown, to some extent, by their attendance during Farm and Home Week. More than one thousand persons were registered during the week and many visitors did not register.

Each of several departments presented a well-balanced program. These programs were intended to be primarily instructional and inspirational. Numerous methods were used to put across well worthwhile messages. Charts, displays, and demonstrations were all used. The apple display of the Department of Horticulture and the livestock show of the Departments of Dairy Husbandry and Animal Husbandry were especially good.

Two judging contests of unusual interest were held during the week; namely, the apple-judging contest and the livestock-judging contest.

The Apple Judging Contest

This contest consisted of judging six classes of apples, each class consisting of four plates of five apples each; and the identification of 25 varieties.

There was a possible score of 500 points, and there were 15 contestants. The high men were:

Place	Name	Score
1st	J. D. Buckman, Paola	391
2d	Wilford Vilven, Wamego	386
3d	A. K. Barnes, Alma	376

The Livestock-Judging Contest

This contest was open only to farmers of amateur judging experience and consisted of the placing of one class each of cattle, horses, sheep, and swine. Three hundred points were possible and 65 farmers entered the contest. Results were as follows:

Place	Name	Score
1st	T. H. Belden, Horton	254
2nd	G. L. Bloom, Medicine Lodge	249
	Keith McCullum, Elmdale	249

The Banquet

One of the most enjoyable events of the entire week was the Farm and Home Week banquet which was held Thursday evening at the college cafeteria. Prof. Albert Dickens was toastmaster and W. A. Cochel, managing editor of the Kansas City Weekly Star, was the principal speaker of the evening. Excerpts from his speech are as follows:

"Agriculture is a progressive business. The farmer who was successful ten years ago might not be successful today and the one who is today successful might not be ten years from now. The farmer to be successful must keep abreast of the times. The farmer is better off today than he was ten years ago. He may not have more dollars, but he has fewer debts.

"Marketing is one of the big problems facing the farmer. He must produce more cheaply and keep marketing costs down. The Kansas State Agricultural College is doing much to help the farmers of Kansas to keep up with the scientific development of agriculture. The institution has helped Kansas take her place as one of the leading agricultural states."

The Livestock Show

Perhaps the livestock show was the most popular event of the entire Farm and Home Week program. Outstanding breeding and prize-winning animals of the college herds and flocks were on display for the pleasure of the Farm and Home Week visitors. Practically all the show animals of the past show season, some of which were outstanding winners in their classes wherever shown, were included in the show. Much appreciation was paid to the various prize winners. Especially was this true in the case of "Billy," the cross-bred fat wether which won the grand championship in the fat wether class at the Kansas Free Fair, Topeka; the American Royal at Kansas City; and the International at Chicago.

The Hog-Calling Contest

In conjunction with the livestock show was held the first students' hog-calling contest ever to be held at the college.

Elimination contests were held Monday

and Tuesday afternoons, to select the best caller from the freshman, sophomore, junior, and senior class, respectively; also from the Farmers' Short Course class. The winners in each class were:

Freshman L. L. Compton, Formoso
 Sophomore W. N. Page, Detroit
 Junior W. D. Nyhart, Atchison
 Senior Ted Guthrie, Saffordville
 Farmers' Short Course R. W. Webber, Winfield
 L. L. Compton was judged to be the champion hog caller in the college.

The county attendance cup was won by

Dickinson county for the second consecutive year, and if won next year will become the permanent possession of that county.

K. S. A. C. LIVESTOCK WINS

The livestock winnings of the Department of Animal Husbandry for the season of 1925 show that the quality of animals being produced by K. S. A. C. is very high. Looking back over the winnings of previous years, it is evident that the past season was one of the most successful seasons that has been enjoyed



Billy

The outstanding winner during the past show season in the show herds of K. S. A. C. was Billy, a Shropshire-Southdown cross-bred wether. Billy has been a winner of first and champion wherever shown. His winnings at the various shows are as follows: First wether lamb and champion wether, Kansas Free Fair, Topeka; first Shropshire wether lamb and champion Shropshire wether, American Royal Livestock Show, Kansas City; first Shropshire cross-bred wether lamb and champion Shropshire cross-bred wether, also first cross-bred wether lamb and champion cross-bred wether, International Livestock Show, Chicago.

since K. S. A. C. began showing livestock at the various livestock fairs and shows.

Below is listed a brief summary of the winnings of the season of 1925 as compared to that of 1924.

1925	1924
24 championships	19 championships
97 1st prizes	103 1st prizes
89 2d prizes	71 2d prizes
93 3d prizes	59 3d prizes

These winnings were made on:

1. Cattle, hogs, and sheep at the Kansas Free Fair, Topeka.
2. Cattle and sheep at Kansas State Fair, Hutchinson.
3. Cattle and sheep at the Kansas National Livestock Show, Wichita.
4. Cattle, hogs, and sheep at the American Royal, Kansas City.
5. Sheep at the International Livestock Show, Chicago.

Some of the outstanding winners of the season were: Junior champion Shorthorn bull and champion Shorthorn get of sire at the Kansas State Fair, Hutchinson. First prize futurity winner, Poland-China sow at the Kansas Free Fair, Topeka. (It is interesting to note that this is the third generation of futurity winners at the Kansas Free Fair, as the mother and grand-mother of the sow which won last season, were also futurity winners at the same fair.) Champion fat wether at the American Royal Livestock Show, Kansas City; also champion Poland China barrow at the same show—both were outstanding winners in each of their respective classes.

Probably the greatest honor won by any animal shown was won by the grade and cross-bred wether which won the grand championship at the International Livestock Show at Chicago.

KANSAS WINS SECOND AT DENVER

The junior stock-judging team of Kansas State Agricultural College placed second in the intercollegiate judging contest held at the National Western Livestock Show at Denver, January 16, 1926. Four teams competed in the contest, their ranking and scores being as follows:

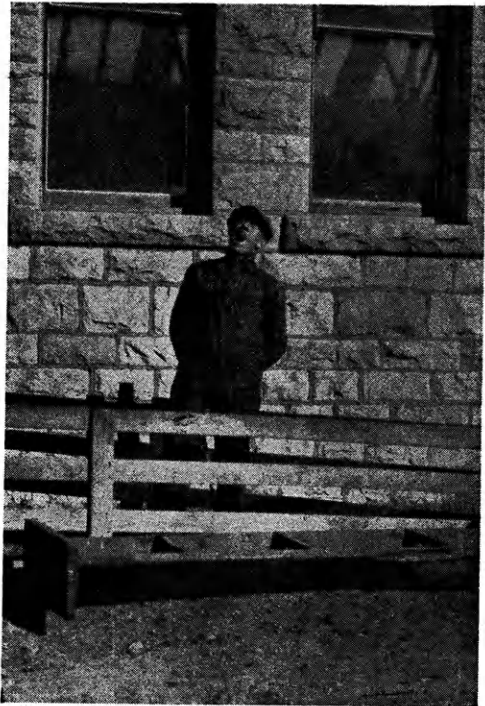
Rank	Team	Score
1st	Nebraska	3,249
2d	K. S. A. C.	3,228
3d	Wyoming	2,990
4th	Colorado	2,943

The Kansas team was composed of C. W. Thole of Stafford, E. F. Carr of Byers, G. J. Stewart of Manhattan, Harold Johnson of Norton, R. H. Davis of Effingham, and Howard Vernon (alternate) of Oberlin.

C. W. Thole was high individual on the

Kansas team and third in the entire contest with a score of 663 out of a possible 800. E. F. Carr placed fifth with a score of 661, G. J. Stewart, eighth with 638 points, and R. H. Davis and Harold Johnson tied for tenth place with a score of 633.

Ten classes of livestock were judged in the contest. These included four classes of cattle



The Champion Aggie Hog Caller Doing His Stuff

The above picture shows a snap-shot of L. L. Compton, freshman from Formosa, in action in the hog calling contest. The contest went off with a bang and showed keen and close competition.

(two each of fat and breeding cattle), three classes of hogs, two classes of sheep, and one class of horses.

ALPHA ZETA INITIATION

Alpha Zeta, honorary agricultural fraternity, held formal initiation on January 19, 1926, for George J. Stewart, Manhattan; E. I. Chilcott, Manhattan; John H. Shirkey, Madison; P. A. Axtell, Argonia; and J. C. Wallace, White City. Following the initiation an informal dinner was served.

Alpha Zeta holds an election each semester of the college year, electing to membership students of the Division of Agriculture who

have attained high scholastic standing, being in the upper two-fifths of their class, and have those qualifications requisite for leadership.

AGS WIN IN ESSAY CONTESTS

The essay of M. P. Brooks, Columbus, senior, majoring in dairy husbandry, was placed sixth in the group of 130 essays submitted in the Saddle and Sirloin Club essay contest held in Chicago last December. This contest is held

sociation.

The content of Mr. Kleinenberg's essay can be found in the October, 1925, issue of *THE KANSAS AGRICULTURAL STUDENT* (Vol. V, No. 1), page 6, under the heading "My Impressions of Hazford Place." It may also be found in *The Breeders' Gazette* of January 14, 1926, page 41, under the heading "Impressions of a Hereford Ranch."



New Ags in Alpha Zeta

Bottom row, left to right: George J. Stewart, Manhattan; J. C. Wallace, White City; E. I. Chilcott, Manhattan. Top row, left to right: John H. Shirkey, Madison; P. A. Axtell, Argonia.

each year by the Saddle and Sirloin Club for the purpose of encouraging students to write on livestock topics. The subject for the 1925 contest was "The Ton Litter as a Teacher." The contest is open to all students of agriculture in the agricultural colleges of the United States and Canada. Students from 21 colleges entered the 1925 contest.

T. M. Kleinenberg, Petersburg, Transvaal, South Africa, senior majoring in animal husbandry, was the winner of the prize offered for the best account, written by a college boy, of the Hereford Field Day at Hazford Place, owned by Robert H. Hazlett, Eldorado, Kan. The contest was held under the auspices of the American Hereford Cattle Breeders' As-

STUDENTS' JUDGING CONTESTS

Each spring the Departments of Agronomy, Animal Husbandry, and Dairy Husbandry hold judging contests open to any student in the college. This year each contest is divided into a junior and a senior division in each of which suitable and valuable prizes are offered.

These three important events in the Division of Agriculture, will occur on the following dates:

Grain Judging Contest: Saturday, April 17
 Stock Judging Contest: Monday, April 19
 Dairy Judging Contest: Saturday, May 1.

J. H. Moyer, '21, is teaching agriculture in Holton High School.

K. S. A. C. TO HOLD FIRST BABY CHICK SHOW

The first baby chick show ever held will be a feature of the Baby Chick-Egg Show to be held at K. S. A. C., April 14 to 17, 1926. This show will be sponsored by the college and handled entirely by members of the freshman and sophomore classes. The management is as follows:

Superintendent	Oleve Manning
Secretary	E. S. Fry
Treasurer	V. M. Rucker
Advertising Manager	H. E. Myers
Entry Manager	Carl Heinrich

Each chick exhibit will consist of 25 baby chicks that have never been fed. The chicks will be scored on arrival condition, uniformity of size and color, vigor, and weight. Each dead chick will cut the entry two points. Side sprigs on comb and stubs will, if found on any chick, disqualify the entire entry.

A baby chick show such as this one, which is open to students, poultry raisers on the farm or in the city, and commercial hatchery men, puts to a practical test the poultryman's ability to produce chicks that are strong enough to be shipped. This phase of the show is mainly for the purpose of giving credit to hatchery men who can ship their baby chicks and have them arrive in good condition. Chicks entered in the contest must not have been fed and must not be more than 72 hours old.

Egg shows have been conducted in several colleges for the last 14 years. Several schools in the East have had great success with their egg shows.

The egg show will be open to faculty, students, high schools, grade schools, breeders, produce houses, etc. There will be separate classes for white and brown eggs.

Each egg exhibit will consist of one dozen eggs scored according to the Standard of Perfection score card on uniformity of size, color, and shape; interior quality; shell texture; condition; and weight.

The object of the egg exhibit is to foster the production of better eggs and closer selection of hatching eggs.

SIXTH ANNUAL HIGH SCHOOL JUDGING CONTEST

The sixth annual State High School Contest in the judging of farm products will be held at K. S. A. C., Thursday and Friday, April 22 and 23, 1926. This contest promises to be bigger and better than the fifth in which 62 schools competed.

SIXTH ANNUAL AG FAIR, MAY EIGHTH

"Action" is to be the slogan of the sixth annual Ag Fair according to the directors of the big spring event. The directors are glad to announce further their full confidence in the men selected to have charge of the various activities. These men have been chosen for their ability and knowledge of what is expected of them. They are all capable men and their records in previous fairs prove them to be workers.

For the 1926 fair many changes have been made in the list of attractions offered in recent fairs. Some things have been dropped, others have been added. The changes have been made with the idea of bettering the Ag Fair both in its entertaining and educational features. In fact the 1926 fair promises something of value to all who see it, something that will give much light on many phases of the agricultural training given students in the Division of Agriculture.

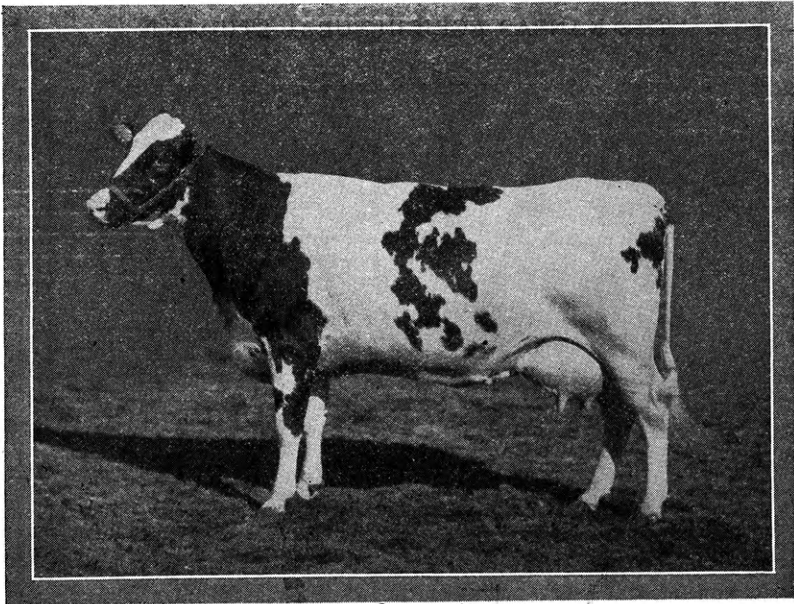
A parade—fast and snappy—is scheduled to leave the fair ground on the north campus about noon. It will present some new features.

The pike will open at 3 p. m. A new arrangement of side shows will be in evidence. The educational exhibitings will be more extensive and more complete than they have ever been before. There will be a rodeo in the afternoon just north of the Ag buildings. It will be managed by one who has had three years experience in rodeos. The follies will occupy the north end of the pavillion as usual. Their programs will be hummers. The minstrels, located on the pike, are planning to present new ideas and have material that will make their reservation on the pike popular.

The board of directors for the Sixth Annual Ag Fair consists of the following well known and capable students in the Division of Agriculture: A. C. Hoffman, manager; Raymond H. Davis, assistant manager; H. Wayne Rogler, secretary-treasurer; and Guy H. Faulconer, fourth member of the board.

R. B. Becker, formerly a member of the Department of Dairy Husbandry, received his doctor's degree from the University of Minnesota this summer and is now in charge of dairy research in Oklahoma A. and M. College.

Charles Nitcher, '21, is attending the University of Chicago.



B M's Bangora Melrose

This purebred Ayrshire was the United States champion for 1925 in the senior four-year-old class, for which she was awarded the French cup. These cups are awarded each year to the highest record cow in each age class. They are provided by an endowment fund given by Miss French in honor of her father who was very much interested in Ayrshire cattle. This is the fourth French cup to be won by K. S. A. C. Ayrshires.

Bangora holds two state records. As a junior two-year-old she made a state record by producing 16,140 pounds of milk and 616 pounds of butterfat. On her record just completed she broke the senior four-year-old record with her fat production of 16,887 pounds of milk and 703 pounds of butterfat. This places her sixth among American Ayrshires.

SIXTH ANNUAL AG FAIR

SATURDAY—MAY 8—NORTH CAMPUS

PARADE 12 M.—PIKE OPEN 3-12 P. M.

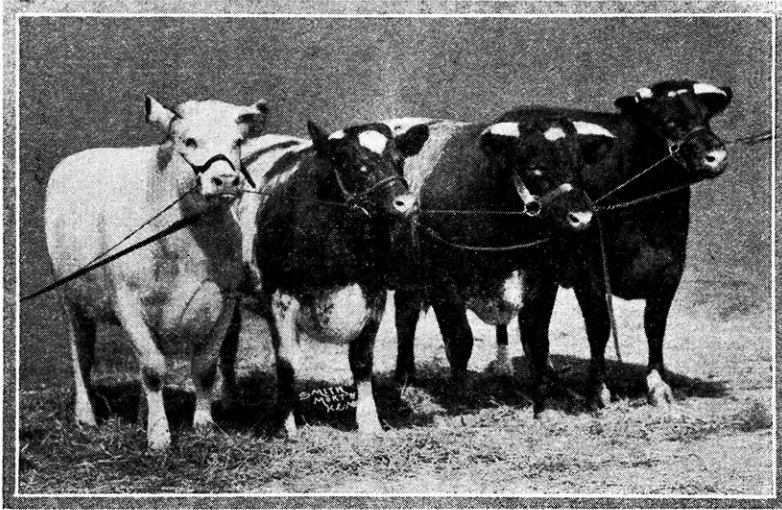
THREE BIG SHOWS

SIDE SHOWS—CANDY WHEELS—EATS

DANCE

—ALSO—

RODEO—NORTH OF CAMPUS—3 P. M.



First Prize Shorthorn Get of Sire, 1925

These four Shorthorns, bred and shown by K. S. A. C., winners in their class at the Kansas State Fair, Hutchinson, 1925, were sired by Gwendoline Dale 1020346, the college Shorthorn senior herd sire. Their paternal grandsire was Matchless Dale, famous for the number of prize-winning animals he sired while at the head of the college Shorthorn herd.

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Programs—Menus—Stationery

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WHENEVER a farmer gets a net selling price for his products that is higher than the total cost of production, times are good for him.

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He can, however, make a reduction, oftentimes a big one, in power and labor costs. When a thinking farmer finds out that these items make up, on the average, sixty per cent of crop production costs, he takes immediate steps to cut down this expense.*

This opportunity to reduce, at once and greatly, his power and labor costs is here offered to every farmer. Case tractors and power farming machinery make possible the better methods which alone can assure, to many farmers, a dependable margin of profit under the present conditions.

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* See U. S. D. A. Bulletin No. 1348

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Exit The "Greasy Spoon"

The "greasy spoon" restaurant represents a type of cleanliness that is unprofitable, that is not sweet smelling, and that is unpleasant and greasy to the touch — a so-called cleanliness that is not clean

Such unsatisfactory conditions are now being replaced with the sweet smelling, greaseless, truly clean cleanliness which results from using



Surfaces washed with Wyandotte are not only clean to the eye but to the touch as well. Restaurant operators, dairymen and creamerymen, and business men of all kinds find that Wyandotte cleans clean at a reasonable cost.

Indian in circle



Wyandotte
Cleans Clean

in every package

THE J. B. FORD COMPANY

Sole Manufacturers

Wyandotte, Mich.

RELATION OF ENGINEERING TO AGRICULTURE

(Continued from page 78)

ing parts, are some of the factors that have brought about these changes. The tractor 15 years ago was a large mass of iron with excessive weight. This excessive weight required the greater part of the power developed by the motor for moving it around the field, and made it difficult to operate. Today a higher efficiency has been reached whereby lighter construction is possible yet even greater power is developed. The next 15 years probably will show even more development along these lines than the past 15 years.

The first application of mechanical power in agriculture was to the pumping of water by the windmill. Then came the steam engine and the internal combustion motor, which at present is widely used by farmers. By careful study, mechanical power has been applied to a great number of farming operations. Of course, there is room for improvement. The automobile and truck have already been pretty well standardized as to size, cost, and uses. The tractor is coming on more slowly, yet just as surely.

The great problem today is to get the farmer to study his power needs more fully and apply the most economical form of energy. A farmer always feels complimented when told that he has good "horse sense." At the present time he must have good "motor sense" as well, if he is going to compete with his fellow farmers in the utilization of mechanical power.

Willard E. Lyness, '16, is superintendent of the Agronomy Farm of the Nebraska Agricultural Experiment Station.

W. P. Raleigh, '23, and M. A. Smith, '22, are members of the Department of Botany and Plant Pathology of Iowa State College, Ames.

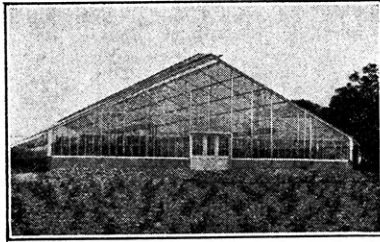
H. A. Noyce, '25, and Hugh Willis, '25, graduates at the end of last summer school from the Division of Agriculture, were honored by election to membership in Phi Kappa Phi.

Paul Robinson, '16, is shift chemist for a sugar refinery in California. His address is 1763 Ninth Ave., San Francisco. A daughter, Sarah Ellen, arrived in his home, December 8.

Fred C. Stockebrand, '23, is teaching agriculture in the Fort Scott High School.

Rex A. Maupin, f. s., is directing Sears-Roebuck broad-casting orchestra.

The Secret of How This Graduate Made a Five Figure Income In Five Years



LIVED in Newark, Ohio.

His folks wanted him to go into some business around home.

Wasn't a thing in the town that he wanted to drudge along in.

Figured that having spent four years at college, he didn't exactly cotton to tying himself down to "just a job."

Neither did he want to go into his father's old business.

So you see, it was the same old story so many of you college fellows have to have sooner or later.

Being a red blooded, two fisted kind of a fellow, with lots of pep and go, he wanted to get into something where he wouldn't have to keep all bottled up.

Looked around a lot during his college days, and finally decided he would build some greenhouses and grow lettuce and tomatoes.

From the very start he made money.

That was 12 or so years ago.

Now he and his Dad have a fine residence on top of a hill, and from their porch now look down on acres and acres of greenhouse-covered fields of lettuce and tomatoes.

Both of them are having the time of their life.

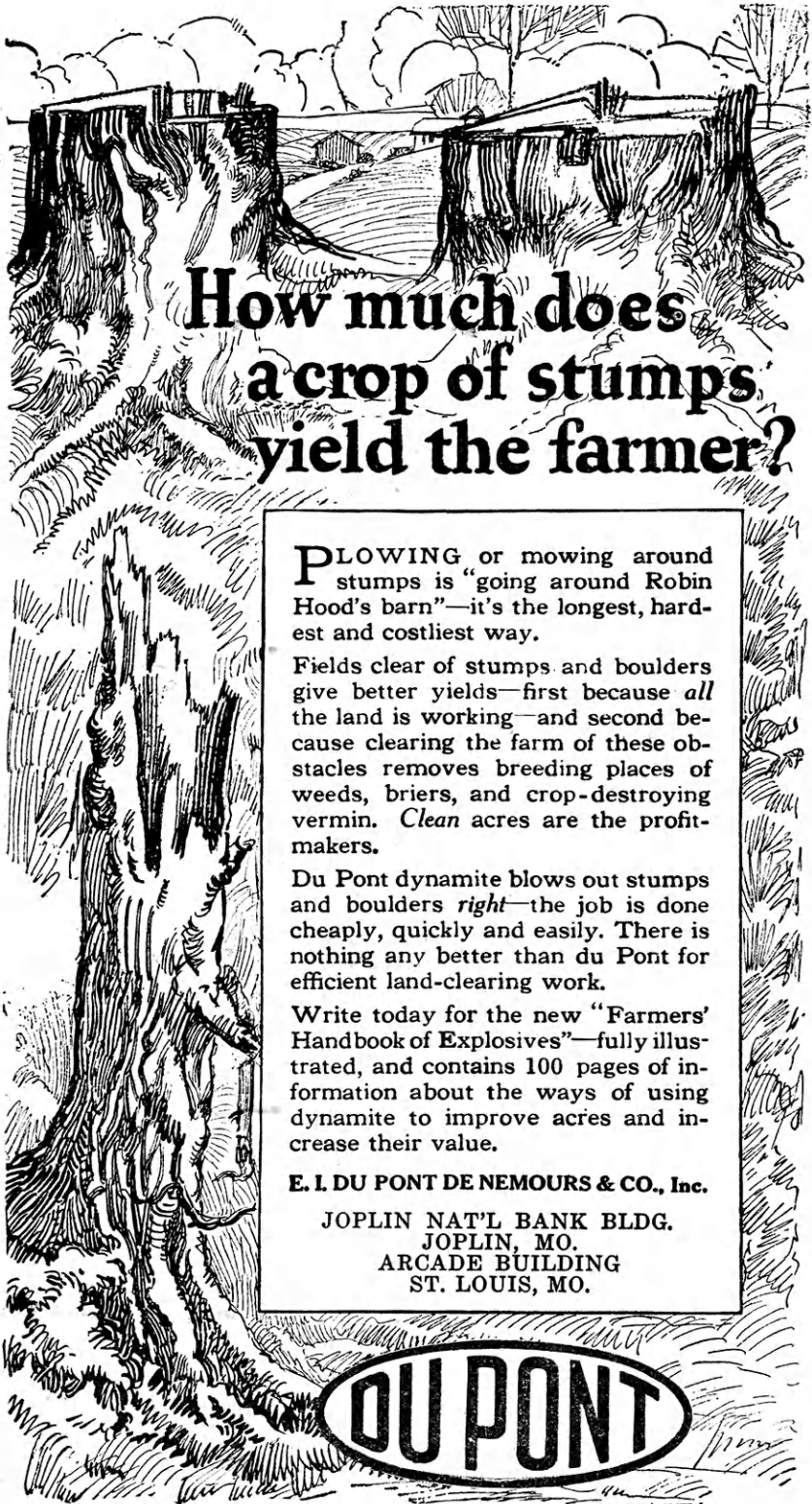
If Carl Weiant of Newark, Ohio can do all this, so can you.

We'll build you the greenhouses and help you in every little detail of getting started.

Write us. Let's get the idea working and plans started.

If interested write to the Manager of our Service Department, Ulmer Building, Cleveland, Ohio; who will give it his personal attention.

Lord & Burnham Co.



How much does a crop of stumps yield the farmer?

PLOWING or mowing around stumps is "going around Robin Hood's barn"—it's the longest, hardest and costliest way.

Fields clear of stumps and boulders give better yields—first because *all* the land is working—and second because clearing the farm of these obstacles removes breeding places of weeds, briars, and crop-destroying vermin. *Clean* acres are the profit-makers.

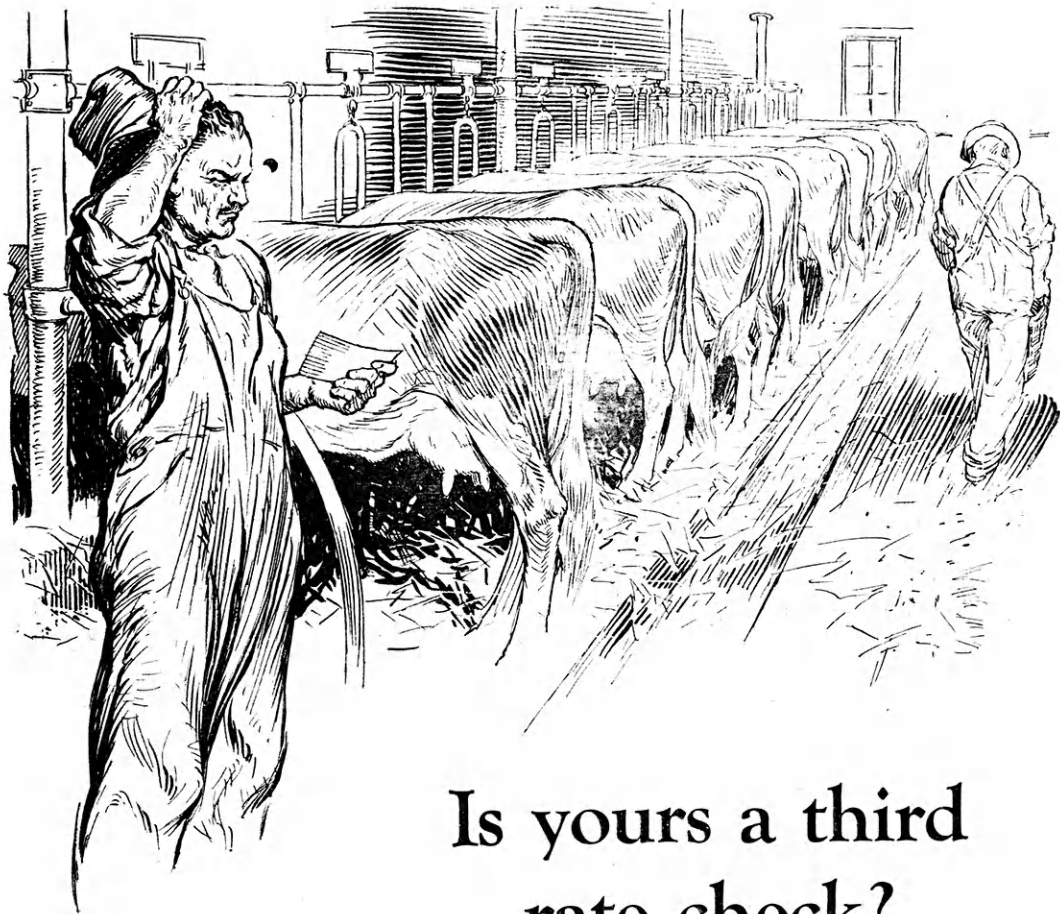
Du Pont dynamite blows out stumps and boulders *right*—the job is done cheaply, quickly and easily. There is nothing any better than du Pont for efficient land-clearing work.

Write today for the new "Farmers' Handbook of Explosives"—fully illustrated, and contains 100 pages of information about the ways of using dynamite to improve acres and increase their value.

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Is yours a third rate check?



You will find this monogram on motors, MAZDA lamps and other electric products that are used in modern dairies.

In sections where farms are electrified you will also find the G-E Farm Book used as a guide. Ask your electric power company for a copy or write us at Schenectady, New York.

A national dairy paper quotes a farmer who says that too many men go to the labor and expense of *producing good milk*—and then take a third-rate product to the creamery.

This farmer has a cooling tank and uses it. On many modern dairy farms, electricity runs the cooling plant milks the cows, separates the cream.

It insures to the farmer the best price obtainable for the quality he turns out.

GENERAL ELECTRIC

THE STORY OF THREE LOAVES OF BREAD

(Continued from page 77)

taken with a view of detecting any injury in milling quality.

Most of the wheat placed in the bins in 1924 carried a high moisture content. As a result some of this wheat heated and what is known as bin-burned wheat resulted. The wheat used in making the three loaves of bread shown in the accompanying illustration was taken from these samples.

The strength of this type of wheat is shown very well in the illustration. The large loaf was made from ordinary Kansas wheat, harvested with not to exceed 13 percent moisture and so stored that it did not heat. This loaf is the proof that "Kansas grows the best wheat in the world." The two other loaves were of inferior size, color, and texture. The middle loaf was made from flour ground from wheat that contained a relatively small amount of bin-burned wheat. The small loaf was made from flour that was made from wheat containing a larger proportion of bin-burned wheat.

It was also noted that flour produced from wheat containing a very small mixture of this bin-burned wheat produced bread that was discolored and rather coarse. This type of flour is what the housewife does not want. The miller knows this, and he buys his wheat accordingly. In fact a car load of wheat that would ordinarily grade No. 1, if it had over 3 percent of bin-burned wheat would be reduced to sample grade, which means that it would bring less money than No. 1 wheat. The farmer must deliver quality wheat—wheat that meets the housewife's requirements.

The most serious objection to the combine is the tendency to begin operating before the wheat is mature enough, or when the grain is damp from dew or rain. A further difficulty often met is green patches in or around the edge of a field of grain otherwise ripe. Such patches, if cut with the remainder of the field, may heat and damage the entire lot, and yet it is often impracticable to leave them out to be cut later. This situation can often be handled by sacking the grain from such places separately and ricking the sacks in a well ventilated place to dry. This causes some extra trouble and expense, but as a rule will well repay the grower in better quality of grain. It

is said on good authority that a larger percent of heat-damage and moldy grain comes through the use of the combine than any other method of harvesting. But if the combine is used properly, there is no more danger of damaged grain from it than from any other properly used method of harvesting. It must be remembered that each method of harvesting has its advantages and disadvantages, and that a large percent of the disadvantages grow out of the abuse of the method.

So there need not be three loaves. If the wheat is dry when it is harvested with the combine, or if the wheat first harvested is placed in separate open bins not very deep, danger of having bin-burned wheat from using the combine will be eliminated. The flour made from wheat properly harvested with the combine is as good as any. If care is used the story of the three loaves can be reduced to the story of one loaf—the typical Kansas loaf—the best loaf in the world.

H. P. Miller, '18, is plant manager for the Decoursey Creamery Company, Kansas City, Mo.

J. C. Wingfield, '23, who is in horticultural work at Matanuska, Alaska, visited K. S. A. C. recently.

J. R. Mason, '14, is with the Great Western Sugar Company with headquarters in the Sugar Building, Denver.

C. L. Harder, f. s., is now a cow tester for the Labette-Cherokee Cow-testing Association with headquarters at Columbus, Kan.

John W. Egger, '24, started work as cow tester for the Shawnee County Cow-testing Association on November 1, 1925.

W. S. Speer, '25, who is superintending the Neodesha Cow-testing Association, conducted a very successful dairy show at Neodesha on Dec. 4.

J. M. Moore, '22, has resigned his position as milk inspector in Kansas City, Kan., and has recently purchased a creamery at Humboldt where he manufactures butter and ice cream.

Carl B. Irwin, '10, is very successfully managing a Jersey herd at Kimberly, Idaho.

J. M. Ryan, '07, is a successful farmer located near Holton. He was a member of the State Tax Commission during the Davis administration.

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High Germination Seedcorn

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Does your Cream Separator Separate Money



from you
or for you?

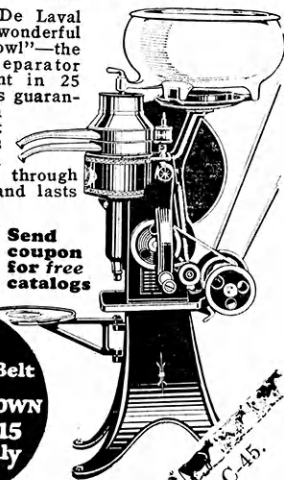
A CREAM separator is supposed to make money for its owner—yet there are hundreds of thousands in use today losing money because of poor skimming. Their owners' profits are going into the skim-milk instead of the cream can. Here is an easy way to show up such cream thieves. Ask your De Laval Agent to bring out a new De Laval and try this simple test:

After separating with your old separator, wash its bowl and tin-ware in the skim-milk. Hold the skim-milk at normal room temperature and run it through a new De Laval. Have the cream thus recovered weighed and tested; then you can tell exactly if your old machine is wasting cream, and what a new De Laval will save.

Thousands have tried this plan and have found a new De Laval would increase their cream money from \$25 to \$200 a year. The new DeLaval is the best cream separator ever made—the crowning achievement in 48 years of manufacture.

Guaranteed to skim cleaner

The new De Laval has the wonderful "floating bowl"—the greatest separator improvement in 25 years. It is guaranteed to skim cleaner. It also runs easier with milk going through the bowl, and lasts longer.



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If you milk five or more cows, a De Laval Milker will soon pay for itself. More than 35,000 in use giving wonderful satisfaction. Send for complete information.



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