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U. S. RADIO FARM SCHOOL

Wed., 11/2/27.

Farm Economics Meeting No. 5.

SUBJECT: Livestock Returns Per Animal

ANNOUNCEMENT: Our farmers are getting down to business. You who met with us in the old school-house this time last week, remember we talked about the effect of crop yields per acre on the profits from the farm business as a whole. At that time, the Department of Agriculture expert said that today he would bring some figures to show what effect livestock returns per animal have on the success of the farm --- There he's getting ready to start now ---

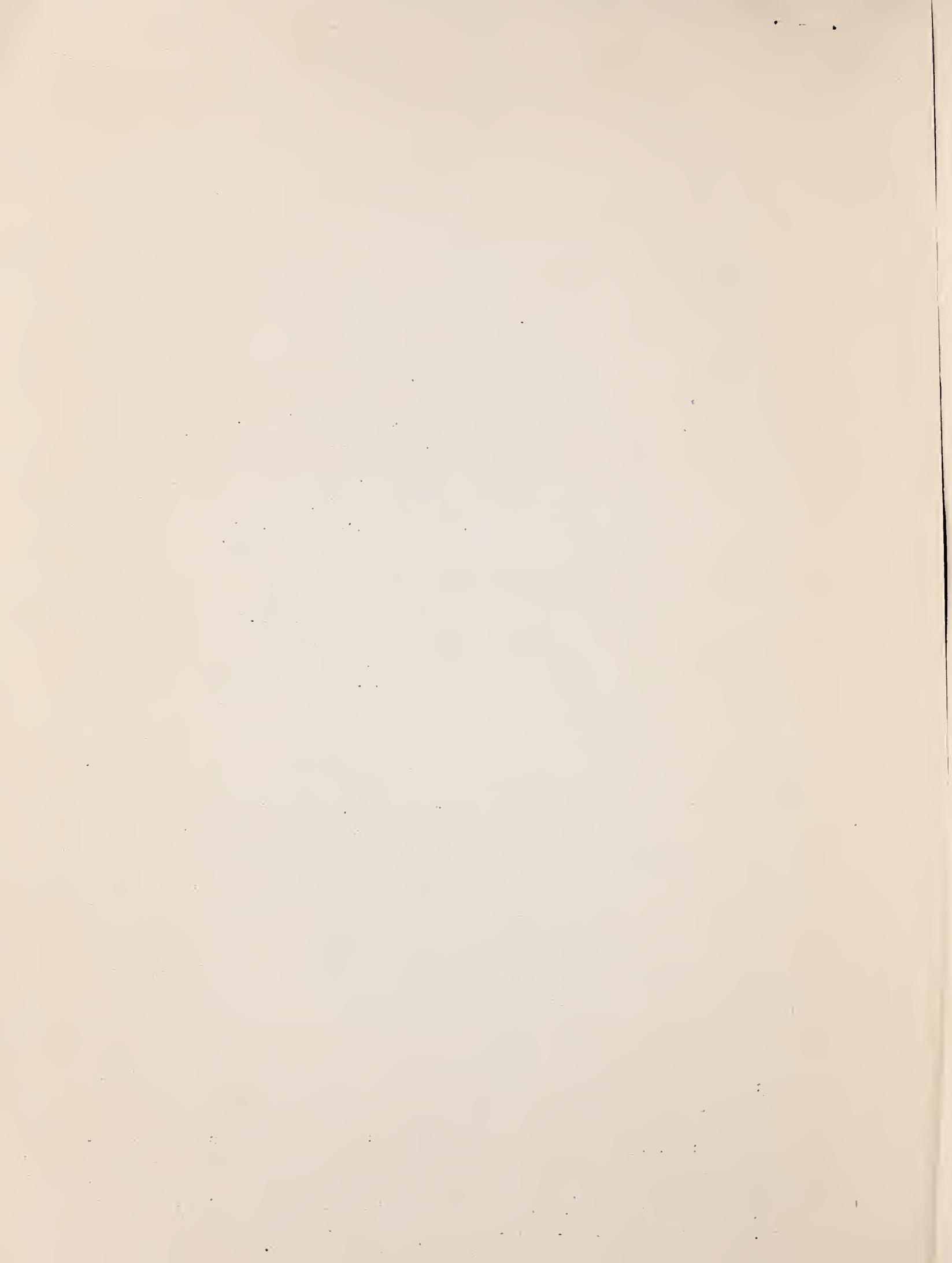
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THE DOCTOR: In some parts of the country, farm receipts come mainly from sales of crops. In others, they come mainly from livestock and livestock products. In still others, the farm receipts from crops and livestock products are around fifty-fifty. But in all localities and on all farms where livestock and such products as milk, eggs, and wool enter into part of the farm receipts, livestock returns per animal is an important factor in the success of the farm business. Of course, it's especially important where sales of livestock and livestock products make up the major part of the income.

As I've mentioned to you farmers before, the United States Department of Agriculture has made a study of farm incomes in several localities in different sections of the country. These studies show, among other things, the part played by livestock returns per animal on the general success or failure of the farm businesses as a whole. In these surveys we found that the farms in each locality which had the best livestock returns per animal averaged more than five times as big a labor income as those farms which had the poorest returns per animal. In localities where practically all the farm receipts came from the sales of livestock and livestock products, the differences were even greater. In such localities, the farms with the best returns per animal averaged twenty times as big labor incomes as those with the poorest returns per animal -----

HALL: There are a lot of reasons for that. Breeding, and feeding, and the care of livestock all figure in -----

THE DOCTOR: Yes, but those are things we'll discuss at some of our other meetings here. What we want to take up now is the importance of good livestock returns, as it affects the success of the entire farm business. As a rule, the better the livestock returns, the bigger the income from the business. In everyone of the many livestock localities from which we have the data there are numerous cases for illustrating that.



For instance, in a dairy farming locality in Wisconsin, the five-year average labor income from one of the farms with good livestock returns per animal was \$1,106. The five-year average labor income from one of the farms with average livestock returns per animal was \$406; while the average income from one with poor livestock returns was only \$39.

Or, take the case of an Indiana locality where hogs are the principal source of income. The seven-year average labor income from one of the farms with good livestock returns per animal was \$1,407. The seven-year average income from one with average livestock returns was \$400, while a farm with poor returns gave an income of only \$28.

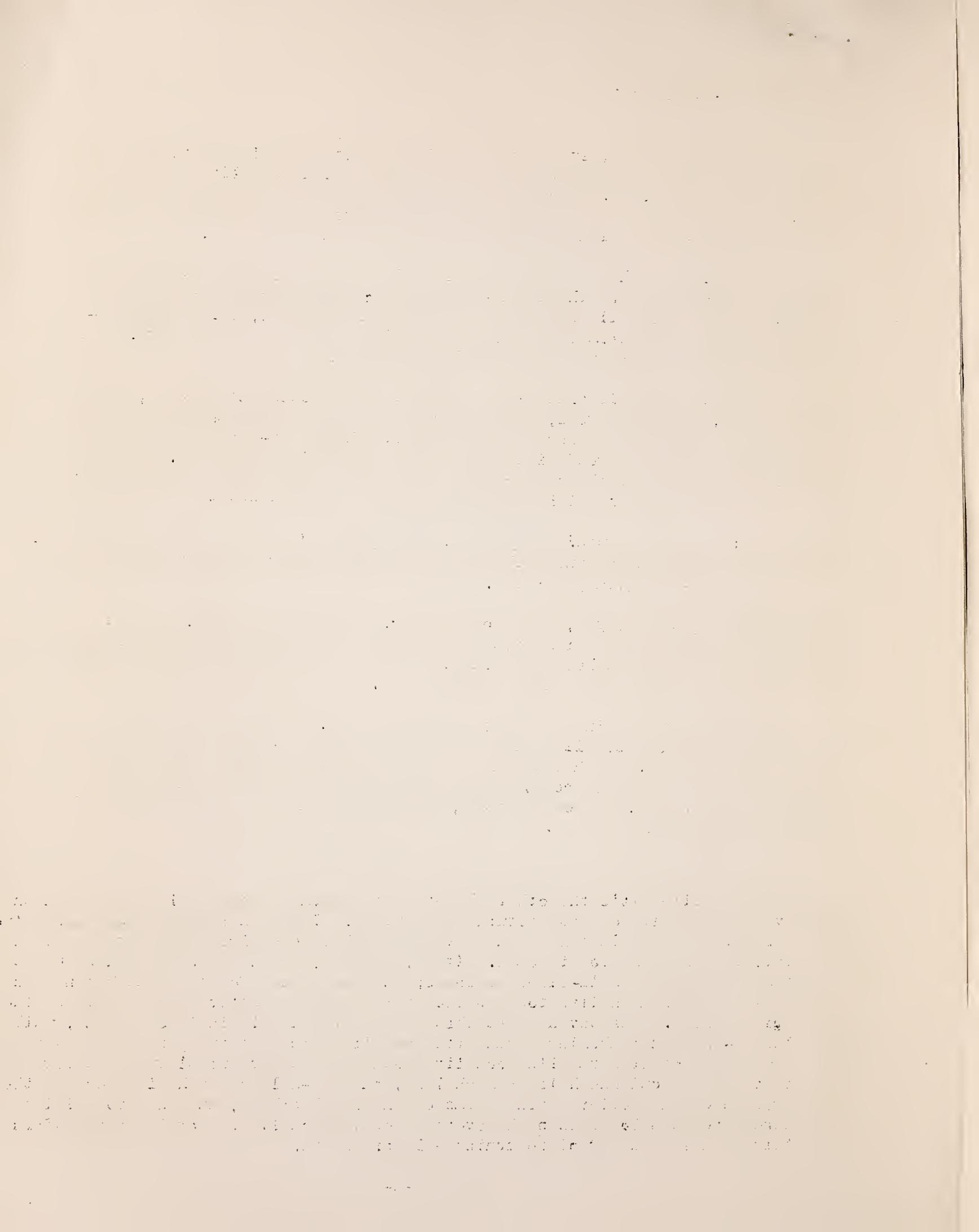
Or, take a locality in the hill land of southeastern Ohio, where beef cattle, sheep and wool, and poultry and eggs are all important sources of farm receipts, the results are similar. The seven-year average labor income from a farm with good livestock returns per animal was \$722. The average labor income for the same period from a farm with about average returns was \$201, and from one with poor returns was \$44. -----

HALL: Just a minute! That may be true, but I've known farmers to get big returns per animal and still make less profit than others whose animals were not such good producers.

THE DOCTOR: Oh, yes, that does happen. From our figures, there is one farm out of twenty with good returns per animal which has a low labor income. And take it the other way around, there is one farm in ten with poor returns per animal that has a high labor income.

I have in mind a case of that kind now. A certain dairy farmer in Wisconsin got poor livestock returns over a seven-year period yet he averaged a good income. He had low livestock returns, but he had good crop yields per acre, low labor cost, and was sometimes able to sell his surplus crops at good prices. In other words, success with other lines of his business brought up his average.

Sometimes it's the other phases of the farm business which drag down the average in spite of good returns per animal. I have here the records from two farms in central Indiana. These two farms had good livestock returns per animal, but they had low incomes. It is, however, not hard to find why. One of the farms had a small-sized business; just about one fourth as much land and one-fourth as much livestock as the average of the better paying farms of the neighborhood. For seven years this farm averaged \$310 in labor income, while thirty-three neighboring farms with good livestock returns per animal averaged \$995. The other farm with good livestock returns per animal but with low income had about one-half as much land, and one-half as much livestock as the average of the better paying farms of the neighborhood, and the crop yields per acre were much lower than the average for the locality. For the seven years this farm lacked \$20 of returning a labor income.



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Another reason for low incomes with good livestock returns is that the cost of production of livestock or of the livestock product is uneconomical; for some reason or other the costs are too high for the returns received, the labor is inefficient, the livestock is not fed economically, or other items of cost are too high.

We had a case of that kind on a dairy farm in East Tennessee last year. In that case, the farm had much above average production of milk per cow for that locality. The farmer received around the average price. But he paid more for labor and for feed than did neighboring farms with equally good production per cow. The value of the labor on this farm was 34 cents for each dollar in receipts, while a neighboring farm paid only 26 cents out of each dollar for labor. The value of the feed for livestock on this farm was 66 cents for each dollar of receipts, while that on the neighboring farm was 46 cents. The result was that this farm lacked \$438 of returning any labor income last year, while the neighboring farm returned \$1,153. That's a difference of almost \$1600. So, you see, you must always keep an eye open to see that production is not obtained at costs too high to allow a profit on the farm business.

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HALL: Just what part/labor costs play in the success of a farm? Give us a few figures on that, will you?

THE DOCTOR: That question of the relation of labor efficiency to farm income is an important one --- but suppose we let that go over until next meeting. Then we can thresh it out more thoroughly. Now, I want you to get the idea firmly fixed in your head that, as a rule, the better the livestock returns per animal the greater the income from the farm business.



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U. S. RADIO FARM SCHOOL

(NOT FOR PUBLICATION)

U. S. Department of Agriculture  
Friday, Nov. 4, 1927.

Livestock Meeting No. 5.

SUBJECT: Hog Cholera Prevention.

ANNOUNCEMENT: Come right on in! ----Yes, this is the livestock meeting of our farmers' club. We meet here in the school-house every Monday, Wednesday, and Friday----- Just take a seat anywhere you can find one ---What's that?---"Who's the man answering the question over there?"--Oh, that's the Department of Agriculture expert. The man he's talking directly to is Fred Holt, one of our best hog raisers.-----

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EXPERT: "A stitch in time saves nine", Holt. Hog cholera travels fast through a herd at this time of the year. A day's delay in giving the hogs protective treatment may mean the death of most of the herd.

HOLT: Isn't there anything will cure hog cholera?

EXPERT: No, drugs are worse than useless. The only known, reliable treatment for hog cholera is the use of anti-hog-cholera serum and virus. If you haven't already had your hogs immunized, watch them closely. The first time hog cholera shows up in your community, call your local veterinarian. Notify the State veterinarian or the representative of the United States Department of Agriculture, who is cooperating with the State authorities in the control of hog cholera. It is unfortunate that so many farmers neglect to call for help until they feel satisfied that the trouble among their hogs is cholera.

HOLT: Will a healthy hog take cholera? I aim to give my hogs good care and feed, and the right amount of minerals.----

EXPERT: That's good for the health of the hogs all right, but healthy hogs are just as susceptible to the virus of hog cholera as those raised under unfavorable conditions. Of course, a healthy hog is better able to resist disease than one poorly nourished. But, even at that, the mortality from the disease in otherwise healthy hogs is about 35 per cent. Don't make the mistake of thinking that because hogs are healthy they won't take hog cholera.

HOLT: Is there any difference in breeds? Is one just as liable to take it as another?

EXPERT: No difference. One breed is as susceptible as another.

HOLT: Some individual hogs don't take it as easily as others.

MEMORANDUM FOR THE DIRECTOR

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EXPERT: If that is so, it's no practical value in fighting hog cholera. No, sir, the only thing you can depend on is immunizing the herd so the hogs won't take it. And don't try to be too economical with the serum and virus, either. Too many farmers use doses of serum and virus that are too small. That's false economy. The veterinarians who are most successful give liberal doses of both the serum and virus. Hog raisers who have had experience instruct their veterinarians to be liberal with the doses.

HOLT: I was thinking of getting my herd treated on a contract basis. What do you think of that?

EXPERT: Don't do it. It would be to the interest of all concerned if veterinarians would refuse to treat herds on a contract basis. No veterinarian can tell definitely how much serum or virus will be needed, until after he has examined the hogs for other diseases and conditions as well as cholera, and until after he has taken the temperature of each hog as he is about to treat it.

HOLT: Some folks say that that virus used in the treatment kills a lot of hogs. Is that so?

EXPERT: Losses may occur if you administer the virus to hogs suffering from "flu" or pneumonia. Most of the bad results following the use of serum and virus are traceable to the condition of the hogs at the time of treatment. Diseases or conditions which perceptibly lower the vitality of the hogs make them unfit to receive virus. For that reason, you should insist that the temperature of each hog be taken just before it is treated.

HOLT: But suppose they've been exposed to cholera or are in danger of being exposed. What can you do if they've got a little something else.

EXPERT: They should be given the serum alone. That will make them immune from cholera temporarily. Then during the period of immunity, you can get busy getting them in condition for the virus with serum.

HOLT: How long will that serum alone last?

EXPERT. It will give immunity for only from two to six weeks. In some cases, however, it would be more economical to repeat the serum alone treatment than to administer the simultaneous treatment to hogs that are not yet in condition to receive virus.

It seems strange to me that so many otherwise intelligent farmers give so little thought to the preparation of their herds for the treatment. Even the most healthy herds should be kept under close observation for several days before the treatment. Feed them easily digested food and plenty of water. The hogs to be treated should be assembled and fed in cool, comfortable quarters at least two days before the arrival of the veterinarian, in order that they may become accustomed to their surroundings. Avoid exciting or worrying them, or you may cause their temperatures to go up. Keep all feed from them for twelve hours before the treatment is given, but have water where they can get to it when they want it.

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And remember too, that the care of the herd immediately after the treatment is of as much if not more importance than the preparation for it. The treated hogs pass through a more or less severe reaction to the virus, even though it is modified by the accompanying injection of serum. As you know yourself, when human beings receive comparable immunization treatment against various diseases, many of them have to go to bed for a week or more. For economic as well as humanitarian reasons hogs should be made as comfortable as possible after the administration of virus and serum.

HOLT: What do you do to make them "comfortable"?

EXPERT: Give them clean, well-ventilated quarters. Spray the bedding with a disinfectant. Provide clean water where they can get to it day and night. Restrict the grain ration to about one-half the usual quantity for at least two weeks. When possible allow the hogs to graze and exercise in a clean pasture near the shelter; one in which there are no running streams or mud wallows. Keep the feed troughs clean, preferably by scalding and scrubbing with hot water to which lye has been added; after which they should be rinsed with clean water. At the end of two or three weeks, if the herd is doing well, the diet may include some corn and can gradually be increased to full feed. Lack of proper feeding following immunization of swine is believed, by some who have given the subject much study, to be the cause of some so-called "breaks" in immunity. Change of feed from an ordinary to highly nutritious diet should be made gradually, especially if such a change is made within several weeks following the immunization of the herd.

Most of the unsatisfactory results following immunization can be avoided if anti-hog-cholera serum and virus are given in time, if reasonable precautions are taken before and after the treatment.

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U. S. RADIO FARM SCHOOL.

Mon., Nov. 7, 1927.

Crops and Soils Meeting No. 6.

Subject: Pear Blight Eradication.

ANNOUNCEMENT: I guess we are all here. The school-house seems to be full. You know, we hold these meetings here three times a week; Mondays, Wednesdays, and Fridays. At these Monday meetings we talk over crop and soil questions. There's the Department of Agriculture man over there. He tells us what the experts say about these things. He's talking with Gus Thomas about pear blight now.

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THOMAS: They tell me that pear blight often kills a tree in a single night. Is that true?

EXPERT: No. It never kills a tree in one day or night, no matter how bad conditions are for the blight. There is no question, though, that pear blight is one of the most serious diseases of pear, apple, quince and other fruit trees of that sort. It is true, too, that whole branches and tops of the trees may die rather suddenly, without any cause visible to the naked eye. It sometimes looks as if the tree might have been killed by fire.

THOMAS: That's what we call fire blight. It was in our apple orchard this summer.

EXPERT: Well, you know, there is a true fire injury or fire blight. For that reason, it's better to call the disease pear blight, even on apple and quince trees. Pear blight most often attacks the blossom clusters, the fruit spurs, and the young shoots. Fortunately, most of the infections stop with the twigs. The really serious nature of pear blight comes from its attacks on the larger branches, bodies, collars and even root systems of the trees. It does most of its damage as a bark disease. On account of its girdling action, it is especially serious when it attacks the collars of the tree at the ground line.

THOMAS: What is the cause of pear blight anyway?

EXPERT: It is a disease caused by bacteria. The bacteria can most easily enter and live in the blossoms. From the blossoms, they most often spread to the fruit spurs, then infect the twig tips. The reason the spread is often not noticed, is because the bacteria can spread along the inner bark. When they multiply enough to completely occupy the sap vessels in the tissue, the tree collapses.



THOMAS: How do the bacteria get from tree to tree?

EXPERT: They are carried by insects such as bees, which visit the blossoms for pollen and nectar. They are also carried by flies, plum curculios and other insects onto the twigs and even by birds, especially the sapsuckers.

THOMAS: Are there any blight-proof apple trees?

EXPERT: No. There are no strictly blight proof pears or apples, but many varieties are very resistant. Many of them are attacked very little. The age has a very great effect, too. Young, tender rapid growing trees are usually most affected. Orchards thickly planted, crowded trees, are more resistant. The style of pruning also effects the disease to a considerable extent. Trees which have water sprouts on the trunk and branches and trees which have fruit spurs on the main branches are more subject to the girdling effect of blight from infection from these sprouts and spurs.

THOMAS: How long does pear blight take to run its course?

EXPERT: Usually the bacteria die completely in the dead bark and twigs after a month or so of ordinary summer weather. But sometimes the germs in the deeper layers keep alive until fall. When they go into winter alive they usually survive. They are practically put in natural cold storage. In that way, the disease is held over to reinfect the orchard next spring. Cutting out and burning the hold-over is the most important single step in the control of pear blight. Cutting out the blight even in summer is often helpful, but the frequent failures of summer cutting lead to discouragement.

THOMAS: Just how would you go about getting at that hold-over?

EXPERT: Now's the time of the year to go after it. Go over the trees carefully. Keep a sharp lookout for any dead branches. You can often find them easily by the remains of dead leaves still on them. Take a carpenter's gouge and a heavy sharp knife. Cut into the bark wherever it is discolored and run downward until you find the margin of the normal healthy inner bark. Then saw or prune out a few inches below on perfectly sound wood. After you make the cut, trim it to be sure you have made no mistake; that you are down to sound wood. Then disinfect and paint the wound. It is best to carry a bottle of corrosive sublimate, 1 to 1000 solution, made by adding one of the tablets you buy at the drug store to a pint of water. Carry a swab or sponge. After finishing each particular branch or piece of tree surgery, wipe off the tools with the corrosive sublimate solution. Saturate the cut surface with the solution. Then as soon as it is surface dry, paint it at once with a mixture of coal tar and creosote oil. Use ordinary coal tar and refined creosote oil. Thin the tar with creosote oil to the consistency of a thick paint. Apply the paint with a stiff brush. It is possible to cut the blight out of areas on large limbs by working clear around the infected spot with



a carpenter's gouge and thoroughly removing the bark and even discolored wood before painting. Don't be deceived by the brown patches of rough bark formation which are normal to healthy wood.

THOMAS: Is there anything you can do besides cutting out the blight?

EXPERT: Yes, several things, it is best to avoid planting the most susceptible varieties. Whenever possible plant the more resistant kinds. Blight is less serious in the cooler northern districts and more serious toward the south. Some varieties can be grown near their northern limit which are not practicable farther south. The same is true of drier sections of the west. Moist weather favors the disease. Pear blight comes more or less definitely in outbreaks or periods of epidemics usually two or three years long. These outbreak periods are often followed by somewhat longer periods in which the disease is greatly reduced.

To fight pear blight, avoid over cultivation and over stimulation. Use stable manure sparingly or not at all. The same is true of nitrate of soda and other nitrogenous fertilizers and even to some extent with any fertilizers. -----

THOMAS: That's starving your trees!

EXPERT: Yes. Unfortunately it is necessary to starve and neglect the orchard to some extent when you are fighting the blight. Seed the orchard down to cowpeas or some other fast growing summer cover crop as early next summer as practicable. Even seed it down to grass or clover and don't cultivate or plow it until the danger is over. Practice moderation in pruning. Be sure to cut off the water sprouts and fruit spurs which comes directly from the larger main branches. Keep the fruit and twig growth out on the smaller limbs.

THOMAS: They tell me Grimes Golden and Spitzenburg apples are more subject to the collar blight than most kinds. They are mighty fine apples, though.

EXPERT: That is true but they can be top-worked onto resistant stocks and bodies. They topwork Grimes Golden and Spitzenburg two feet high in the nursery on to Mammoth Black Twig, Paragon, Northwestern Greening, or some other resistant sort which has been propagated by root grafting with a long scion and a short piece of root, or better yet, on a resistant root so there is no Grimes Golden collar or body to blight. The same thing is being done with resistant stocks for pears such as the Bartlett.

You can do much to save your pear and apple orchard by skillful tree surgery and the use of disinfectants. You can even entirely surround large blighted areas with a gouge, remove the infected bark and wood, disinfect and paint up so as to be water proof. But if you find out you can't save the tree by these methods, the best thing to do is to root out the tree and burn it up; so as to avoid the spread of the disease to near-by healthy trees and orchards.

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U. S. RADIO FARM SCHOOL

Wednesday, Nov. 9.

(NOT FOR PUBLICATION)

Farm Economics Meeting No. 6.

SUBJECT: Efficiency in the Use of Labor.

ANNOUNCEMENT: Have you been taking in these farm business talks we've been having every Wednesday? We've been getting some convincing figures from the Department of Agriculture expert, as to what makes for success in farming. One week our farm club here discussed the relation of the size of the farm to profits. Another time, we went into crop yields per acre. Last week we got the figures on the relation of returns per animal to farm success. At this meeting, we've agreed to take up the question of labor --- but they've already started --- Let's get down closer.-----

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THE DOCTOR: Yes, our studies in several localities of the United States, have shown that the farms in each locality, which were most efficient in the use of labor, averaged more than two and a half times as big a net income as those farms which were least efficient -----

ARMSTRONG: Just a minute, there ----- How did you judge the efficiency in the use of labor?

THE DOCTOR: We measured it in terms of the number of crop acres handled per man. That's satisfactory, for comparative purposes, Armstrong, where the farms are the same general type.

For instance, in the case of farms in the hill land of southeastern Ohio, one farm with about 40 crop acres per man returned a seven-year average labor income of \$474. One with 30 acres per man returned \$303. One with 20 acres per man returned only \$198.

Or take a locality in central Indiana. One with around 80 crop acres per man brought in a seven-year average labor income of \$1280; one with 60 crop acres per man returned a labor income of \$972. One with around 40 acres per man returned only \$793.

ARMSTRONG: Well, how are you going to make the labor more efficient?

THE DOCTOR: Some farmers in many sections are increasing their labor efficiency by shifting toward bigger farm units. That gives them a chance to increase the gross returns without a corresponding increase in the outlay for labor and equipment. Then, in every region, there are farmers who are



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introducing minor enterprises, or giving more attention to them in order to round out the labor program and to use non-marketable feeds and other resources which otherwise have no value. For instance, throughout the Northeastern States an increasing number of farmers are growing a few acres of potatoes as a side line to dairy farming. In the South an increasing number are growing a few acres of truck crops as a side line to cotton production. In the Great Plains more farmers are keeping a few milk cows as a supplementary enterprise on grain farms.

ARMSTRONG: I don't just see how that is increasing the labor efficiency.

THE DOCTOR: Well, let's take a concrete case of two 160 acre farms near each other in a locality in East Tennessee. They are being farmed under much the same conditions. They have the same type of farming; producing corn, wheat, barley, and hay. They are both dairy farms of from 15 to 18 cows, and both are selling fluid milk. Yet in 1926 one of those farms returned a labor income of \$1153, while the other lacked \$438 of returning any labor income at all. The first farm produced just a little less, but it spent only \$912 for labor, while the second spent \$1381 for labor. The labor cost for each dollar of receipts from the first farm figured out 26 cents, and from the second farm 34 cents. There was a tractor, an auto truck, and a milking machine on the first farm, while on the second there were none of these and a good price was paid to someone else for hauling the milk.

ARMSTRONG: All that difference wasn't due to labor efficiency, was it?

THE DOCTOR: Maybe not, but an important part of it was. Take the case of a farmer in the hill land of southeastern Ohio, then. He re-arranged the fields in his farm, and converted the two crop field farthest from the buildings into permanent pasture. By the re-arrangement he figures that he saves about 40 hours per year in going and hauling to and from the crop fields, and that this time devoted to the present crop land gives higher yields per acre. He does grow more feed on the present 42 acres of crop land than he formerly did on 56 acres, and has more pasture land. In working out this change, he did away with nearly 400 rods of fence.

On a sheep farm in an irrigated locality in Idaho, 500 acres of alfalfa are cut three times a year. Year before last, the haying crew was made up of 14 men who worked about eight hours a day. For cutting, they used five mowers, and two sulky rakes followed directly behind the mowers. After the hay was raked into windrows, seven men put the green hay into cocks. That crew cut, raked, and cocked about 40 acres of hay a day. Last year certain changes were made in the raking and cocking crew which lowered the cost of haying and still kept up the same high quality of hay.

ARMSTRONG: How did they do it?

THE DOCTOR: Well, they used the same five mowers, but two side delivery rakes, in place of the sulky rakes, followed about half a day behind the mowers. One rake went around the field in the same direction as the mowers, and the other in the opposite direction, thus throwing one windrow on top of



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the other. The hay in the windrows was then bunched by one sulky rake, so avoiding the use of hand cockers. In other words, two men with side delivery rakes, and one with a sulky rake did the work that the year before required seven hand cockers and two sulky rakes to do. That saved six men or \$24 a day.

In a locality of irrigated hay and potato farms in the Yakima Valley of Washington there is a 40-acre farmer who uses his labor more efficiently than many of his 40-acre neighbors. He brought this about in two ways: First, by handling livestock along with his crop work, and so providing productive work for labor which otherwise would have been idle part of the year; and, Second, by substituting for part of the hay and potato land other crops on which the work comes at a time when the attention demanded by hay and potatoes is not so urgent. That gives a better distribution of his labor.

On his farm rye invariably follows potatoes and rutabagas for cow pasture during the winter and early summer. He keeps 6 cows, 250 chickens, and 8 turkey hens, while his 40-acre neighbors averaged 3 cows, 55 chickens, and one turkey hen. If he had followed the livestock practice of the crop farmers in his locality and kept only one cow and a few chickens to furnish products for family use, his net receipts would have been about \$750 less than they are. The livestock not only provides productive employment for labor which otherwise would be idle part of the year, but it furnishes an outlet for low-grade and unmarketable feeds and pastures that occur in the production of alfalfa, potatoes, and other cash crops. It is also a factor in obtaining good crop yields per acre, and aids in stabilizing the income which for years has been uncertain in that locality on account of sharp fluctuations in prices of alfalfa and potatoes. Records from several farms in this locality for two years show that the crop sales from this farm were about as much as from the average 40 acre farm and the sales of livestock, cream and eggs were about \$800 more.

I want to emphasize, particularly, that many farmers in nearly every locality have the opportunity to increase their labor efficiency by having their work so well planned that, barring weather conditions, operations may be done on time. A few days delay in cultivating the corn field often makes a marked difference in the amount of work necessary later on; or, if neglected, in the yield of the crop. When the binder or mower has not been made ready for harvest in advance, delays and loss of valuable time often result. The layout of the farm and buildings also has an important relation to returns, but we'll take that up next time.

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U. S. RADIO FARM SCHOOL.

Fri, Nov. 11.

Livestock and Dairy Meeting No. 6.

SUBJECT: Herd Improvement through Better Bulls.

(NOT FOR PUBLICATION)

ANNOUNCEMENT: Our farm club meets here in the school-house three times a week. Mondays we swap crop and soil experiences. Wednesdays we get down to the dollars and cents side of farming. And every Friday we either discuss practical livestock or dairy questions. The Department of Agriculture expert has been giving us some good information along that line. I remember a couple of weeks ago, he gave us figures on the value of testing to improve a dairy herd ----- That bunch down front seems to be talking about bulls now ---- Let's get down closer, so we can hear better.

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HALL: You say, you're going to tell us the true tale of a bull? Go ahead with the story.

THE DOCTOR: No, Hall, this is the true tale of two bulls.

HALL: I'll bet one was a scrub and the other a purebred ----

THE DOCTOR: You're wrong again, Hall. Pete and Jim were both purebred bulls. Pete was mated with cows whose average yearly butterfat production was 290 pounds per cow. His five daughters from those matings had an average yearly butterfat production of 614 pounds.

On the other hand, Jim was mated with cows whose average yearly butterfat production was 499 pounds per cow. His 10 daughters by those matings averaged only 280 pounds of butterfat a year. In other words, the average yearly butterfat production per cow in one herd was increased from 290 to 614 pounds. In the other herd, it decreased from 499 to 280 pounds. As far as production is concerned these two purebred bulls reversed the position of their herds; and they did it in one generation.

HALL: How do you explain that? They were both purebred bulls.

THE DOCTOR: Yes. Pete was a well-bred bull. Not only that, but he had the ability to transmit high production to his offspring. Jim was also a bull of good pedigree, but he did not have the ability to transmit high production to his offspring. In one year, Jim's dam had produced 501 pounds of butterfat. He was mated with cows that averaged 499 pounds a year, but his daughters averaged only 280 pounds. The daughters inherited neither the high production of their dams nor of their sire's dam.



HALL: Then you mean that the proof of the bull is in the production of his daughters?

THE DOCTOR: Absolutely. Take the case of another bull. This bull was the sire of 15 daughters. Every daughter was a better-producer than her high-producing dam. The lowest-producing dam had a yearly butterfat production of 314 pounds. Her daughters record was 573 pounds. On the average, the dams produced 386 pounds of butterfat, and their daughters 545 pounds. In other words, there was an average gain in one generation of 159 pounds of butterfat per cow. That's a 41 per cent gain.

Dairy-herd improvement through the use of better sires requires that the sire have the power to transmit high production. Fortunately a large percentage of purebred bulls are able to do that. Actual records, show, however, that some bulls can not transmit high production. Pedigree and appearance are not always safe guides in selecting a dairy bull. The only sure way is to choose a bull that has already demonstrated his ability to transmit high production.

HALL: All that takes time. How many records should you have?

THE DOCTOR: Well, a bull whose dam and two granddams are high producers and whose first five daughters are better producers than their dams is almost certain to continue to produce such daughters. If the first 15 daughters of a dairy bull have, without exception, excelled high-producing dams, that bull, through his own progeny, has demonstrated his true value. He needs no other backing. In times gone by bulls were selected on pedigree, and appearance. The time is coming when they will be selected on pedigree, appearance and progeny with the emphasis on progeny.

HALL: Then the higher producing herd you have, the harder it is to select a bull.

THE DOCTOR: Yes, of course. A study has been carried on by the Bureau of Dairy Industry in which the records of five or more daughters of each of 306 purebred bulls were compared with the records of their dams and daughters. The results of that study indicate that almost all these bulls were able to improve a herd whose yearly average butterfat production was below 200 pounds. But only about two-thirds of those mated with cows whose production was between 300 and 400 pounds were able to increase production. When production was above 400 pounds about half the bulls actually lowered the production of the next generation. Therefore, it seems safe to say that the only bull that is sure to raise the production of a 400-pound herd is one that has already done so.

The next step in dairying should be the proving of thousands of purebred dairy bulls through comparison of the yearly production records of daughters and dams in dairy-herd improvement associations. It is not enough that the bull's daughters should be high producers; they must excel high-producing dams. Then and only then can the dairyman be certain that the sire is improving his dairy herd. Tabulations of many records in-



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dicate that if the owner of every dairy herd in the 200-pound class would select a bull that has already raised production in a 300-pound herd and if the owner of every dairy herd in the 300-pound class would select a bull that had already raised production in a 400-pound herd; that is, if every dairyman would select a bull whose record for transmitting ability is at least 100 pounds above that of the herd in which he is to be used, a great advance would soon be made in dairy-herd improvement through better breeding. The first step is the elimination of the scrub and grade bull. The next step is the elimination of all inferior purebred bulls. The third and final step is the general use in all dairy herds of good, purebred bulls that have already proved their ability to transmit very high production to their offspring.

HALL: When you can't travel around looking for a bull--When you want to buy a young, untried bull, what's the best way to select him?

THE DOCTOR: Pedigree selection is the best method in such a case. But when you select a bull on pedigree, be sure he is out of a tested dam. Of even greater importance to the record of the dam is the transmitting ability of the sire of the young bull and also the sire of the dam. If the young bull has any half sisters in milk, you should consider their records also. Study the performance records of all female ancestors and of the offspring of the male ancestors; giving the greatest weight to those in the first and second generations. The influence of the ancestor in heredity diminishes rapidly with each preceding generation.

However, one of the pitfalls of straight pedigree selection is the absolute neglect of type. It is true production pays the bills, but animals of good conformation, with nicely balanced udders, are always pleasing to the eye. When sold they will bring higher prices than their ill-favored sisters. If the bull is a young animal, a visit to the farm of the owner will give you a chance to see the sire and dam as well as other individuals of the same family. These give some indication of what to expect in the offspring when allowance is made for the type of the females to which the new bull will be mated. That's about as far as you can go in the selection of a young bull. Unfortunately, all these outward signs do not reveal what is locked up in the germinal make-up of the animal. There is only one way to obtain a herd sire with the assurance that high production will be transmitted to his offspring and that is by the selection of a bull whose value has been proved by the records of his daughters.

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U. S. RADIO FARM SCHOOL

Wednesday, Nov. 16.

(NOT FOR PUBLICATION)

Farm Economics Meeting No. 7.

SUBJECT: Farm Layout

ANNOUNCEMENT: Yes, this is our regular Wednesday meeting. We've been getting some good ideas at these meetings; as to why some farmers make money, while others, with apparently just as good a chance, keep losing money. The Department of Agriculture expert over there has been furnishing us the figures. Crop yields, size of the farm, livestock returns, and labor efficiency and the part they play in profits are some of the things we've had up----- Sh--hush! That's the Department man talking there now.

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EXPERT: Did you ever notice, in traveling through the country, how many different sizes and shapes of fields there are in the farms? I've often seen big fields and little ones, square fields and oblong ones, and irregular shaped ones, all in the same farm ----

TRUETT: Even if you do, what of it? There usually is a reason for the differences.

EXPERT: Yes, you can often see the reason for some of the variations. If you inquire around and study closely, you can often find the reason for some of the others. But there are many variations in the size and shape of fields for which there is neither rhyme nor reason. Some folks don't seem to understand the importance of the layout of the farm. The arrangement of the fields plays considerable part in the efficiency of labor and motive power; in the use of modern and larger machinery; in the economy of fencing and of land. It has its effects on the returns from the farm business.

TRUETT: Well, just what would you say is the ideal arrangement of fields?

EXPERT: The ideal arrangement is to have big fields, rectangular in shape, from  $1\frac{1}{2}$  to 3 times as long as they are wide and all cornering near the farm buildings.

TRUETT: Why should the fields be big?

EXPERT: Big, rectangular-shaped fields cornering near the buildings save labor in going to and from the fields. They reduce the amount of lanes necessary. They make it easier to care for the livestock. Here are some figures for you. They're from actual studies made on some Ohio and New York



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farms. In Ohio, records of the amount of labor used in producing corn on 108 fields show that 86 per cent more man labor and 31 per cent more horse work were used per acre on fields of 5 acres than on fields of over 15 acres. Or take the records from New York. The amount of labor used in performing several field operations show that for plowing 33 per cent more man labor and 20 per cent more horse work were used per acre on fields of less than 5 acres than on those of over 15 acres. For rolling 54 per cent more man labor and 53 per cent more horse work were used on the small fields. For drilling, the small fields took 40 per cent more man labor and 40 per cent more horse work. Cutting with a grain binder took 36 per cent more man labor and 19 per cent more horse work on the small fields than on the big ones.

TRUETT: I'll grant you that bigger fields are better, but I can't see that the shape of the field makes so much difference.

EXPERT: Well, in the Ohio study the average amount of man labor used in producing an acre of corn was 14 per cent more on irregular shaped fields than on rectangular fields. Horse work was 16 per cent more. In New York, records were kept of the time used to plow three fields. Two of the fields were the same size and rectangular shaped. They were about  $2\frac{1}{2}$  times as long as they were wide. The third field was triangular shaped with two of the sides nearly the same length. The first rectangular field was plowed lengthwise in an average of 5 hours 37 minutes to the acre. The second rectangular field was plowed crosswise in an average of 6 hours 24 minutes to the acre. The triangular field was plowed in an average of 6 hours, 52 minutes, to the acre. In other words, 22 per cent more time was used to plow an acre in the triangular field than in the rectangular field which was plowed lengthwise.

And not only is there a saving in time, but a saving in fences with bigger fields. With fields the same shape, the larger the field the fewer rods of fence to the acre are needed to enclose it and the smaller proportion of land is wasted by fences. For instance, if a square field of one acre is fenced, it takes about 50 rods of fencing to do it. But if a square field of 10 acres is fenced it takes only 16 rods of fencing to the acre to enclose it. If it is a square field of 40 acres, 8 rods of fence to the acre is all that is needed to enclose it.

In a study in New York the fields less than 4 acres in size averaged 37 rods of fence to the acre. Fields of from 8 to 12 acres took only 17 rods of fence to the acre, while fields of more than 24 acres needed only 9 rods of fence to the acre. In the case of the small fields, nearly 5 acres out of 100 were occupied by fences. With the medium-sized fields, the amount of waste land on account of fences was about  $2\frac{1}{2}$  acres. With the large fields, only about 1 acre out of 100 was taken up with fences. So, you see, large fields save fencing and waste of land for fences.

Another thing to consider in the arrangement of the fields, is that travel between barns and crop fields is not directly productive work. It is merely getting ready to do something. Some crops, of course, require more trips to the field during a season than others. It was found in a locality



in New York that for a five-year rotation of corn, oats, wheat, and hay, an average of six annual trips per acre were made in producing and harvesting the crops. A field half a mile from the buildings required six miles of travel per acre, or about two hours time per acre a year to get to and from the field.

TRUETT: That's all mighty nice! Big, rectangular fields from  $1\frac{1}{2}$  to 3 times as long as they are wide and all cornered near the farm buildings may be the ideal arrangement, but you've got to take into consideration the size of the farm, the lay of the land, and the kind of farming you doing. Most of us don't have ideal farms.-----

EXPERT: I was just pointing out some of the principles underlying ideal arrangement of fields in the farm layout. Of course, small farms cannot be arranged into big fields.

TRUETT: No. And you often can't arrange fields so they'll be well-shaped on hilly and rough farms. And when only one or two kinds of crops are grown on a farm, it's a lot easier to have big fields than when you're raising several kinds.

EXPERT: That's all very true. From studies we've made on farms, there is a farm here and there which seems to have the best layout, conditions considered. But there are a great many farms in the country whose field arrangements are such that it would be highly practical to improve on them. You don't have to make all the changes at once. You should carefully work out a plan of layout. Then from time to time you can make changes to fit the plan.

An 80-acre farm in Central Indiana, is an example of what I mean. It was a farm with an 8 acre field in alfalfa near the buildings; and one of 5 acres in permanent pasture. There were four larger fields of 13, 14, 17, and 18 acres used in crop rotation. That farmer recognized the handicap he was working under in trying to follow a three-year rotation on the four fields. He worked out a plan by which he converted the four fields into three fields of two 21 acre fields and one 20 acre field. He did that by making the former 17 and 18 acre fields a little larger and by converting what was left of the 13 and 14 acre fields into one 21-acre field. That arrangement suited his crop rotation better, saved 43 rods of fencing, and eliminated two fields nearly square in shape; substituting a rectangular field about twice as long as wide.

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NOV 10 1927  
U. S. Department of Agriculture

Mon. Nov. 14, 1927.

U. S. RADIO FARM SCHOOL

(NOT FOR PUBLICATION)

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Crops and Soils Meeting No. 7.

SUBJECT: Home Grown Subtropical Contributions to the National Cupboard.

ANNOUNCEMENT: Every Monday, Wednesday, and Friday our farm club meets here in the old school house. Fridays we talk over livestock and dairy problems. Wednesdays we discuss farming as a business. Mondays we've been swapping information on crop and soil problems. We're a little late starting-Let's go over there by the stove and hear what the bunch over there is talking about -----

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STEVENS: ----- I saw the other day where there were something like fifty million boxes of oranges, grapefruit and lemons produced in the United States last year. Oranges made up about seventy per cent of the total -----

HORTICULTURIST: It's certainly surprising! The orange business has grown up here in a comparatively few years, too. ---Did you ever stop to think how many fruits we grow and use in this country that are not native to the United States? Just take the sub-tropical ones for instance. There are the orange, the grapefruit, the lime, the date, the avocado, the Smyrna or dried fig.---

STEVENS: You didn't mention bananas.

HORTICULTURIST: They're tropical fruit. I was just speaking about those we call sub-tropical. Of course, oranges are the most important of those.

STEVENS: Where did oranges come from anyway?

HORTICULTURIST: They came from China originally. So did the lemon. That's been proved pretty clearly. Now, the grapefruit is more of a puzzler. Like Topsy, it seems to have "just growed." Grapefruit may have originated in its present perfection in the West Indies from a more primitive imported fruit.

STEVENS: About oranges ---- Just how long have oranges been grown in the United States?

HORTICULTURIST: Oh, the orange has been grown in Florida for about three hundred years. It's been grown in California for probably about a century and a half. But it's only within the last fifty years that orange production has been on a real commercial basis in the United States. Prior to 1870, the orange crop of Florida was limited to the output of a few small groves in the northern part of the State.



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About that time, too, the variety, which later came to be known as the Washington Navel, reached California. The early commercial orange industry of California was based on the Washington Navel orange.

STEVENS: Where did it come from?

HORTICULTURIST: Well, in 1870, William Saunders, then in charge of the propagating gardens of the United States Department of Agriculture, secured twelve small navel orange trees from Brazil. Mrs. Luther C. Tibbets of Riverside, California, happened to visit the Department greenhouses in Washington. Mr. Saunders sent Mrs. Tibbets two orange plants which he had propagated from the imported trees. She planted them on her home grounds at Riverside.

STEVENS: And those two trees are the parents of the California navel orange industry?

HORTICULTURIST: Yes. When the trees began to bear fruit, the oranges were of such superior quality and won so many prizes at State fairs that the budwood was distributed widely. It became known as the Washington Navel because of its peculiar markings and because Mrs. Tibbets' trees came from the city of Washington.

STEVENS: They tell me that date growing is a big success in the Coachella Valley in California. That's another of your imported fruits isn't it?

HORTICULTURIST: Yes, and you might say we're bringing the Garden of Allah to America. It's not only the fruit that's valuable. You should see the trees. They certainly are picturesque. Why, within the next twenty-five years, I expect the date growing sections of the Southwestern United States will be a mecca for tourists just to see the palms.

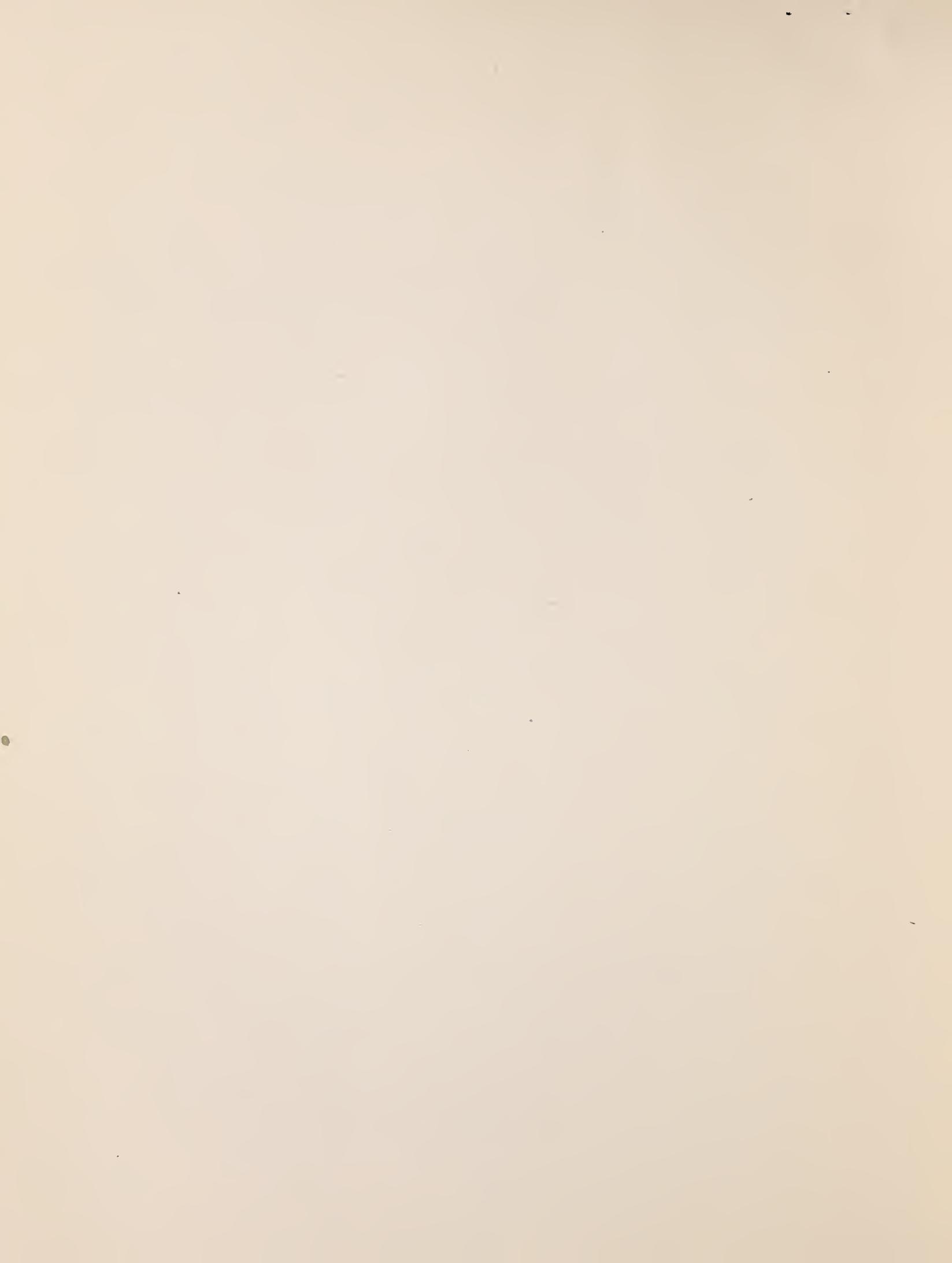
STEVENS: Are there very many date palms out there now?

HORTICULTURIST: There are about twenty-five thousand date palms in orchards in California, Arizona, and Texas. They produced about one million pounds of dates last year. Date palms, you know, were merely a botanical curiosity in this country a few years back. In California last year we produced \$150,000 worth of the famous Deglet Noor, the finest date that reaches the Old World markets.

STEVENS: That's doing pretty well in a few years.

HORTICULTURIST: Yes, but the date was introduced scientifically. The soil, climate, and cultural needs of the date palm were worked out before the dates were brought over, so our growers were protected against any losses due to planting the wrong varieties or planting in the wrong places. You can't re-bud or graft date palms as you do ordinary fruit trees. If the wrong variety is planted it is a total loss.

STEVENS: Speaking of that reminds me, the Department of Agriculture did some good work starting figs in this country didn't it?



HORTICULTURIST: You mean in introducing the fig insect, don't you? The way that was, the Smyrna fig tree, which produces the commercial dried fig, had been introduced, but the figs here always dropped from the trees before ripening. As you may know, the fig, as we know it, is really a flower rather than a fruit. Just as bees carry pollen from flower to flower as they go about the honey-collecting work, a little wasp-like insect carries pollen from the male to the female figs and enables them to mature. The trouble here was, we had the Smyrna or female fig trees, but we didn't have the insects. The fig insect makes its home in the male fig or caprifig. It would not enter the female or Smyrna fig except by mistake. The way the thing is managed, is this: The grower collects the male figs with the insects in them and strings them on thread or places them in baskets which are hung on the Smyrna trees. Then when the insects come out in search of a new home, they crawl into the Smyrna figs, thinking, of course, that they are still on the caprifig tree. In crawling out of the male figs they collect pollen on their wings and brush it off in entering the Smyrna. In that way the Smyrna figs are pollinated and the fruit matures.

STEVENS: So we have the insects working for us now! But speaking of fruits, you mentioned the avocado. That's the same as the "alligator pear" isn't it?

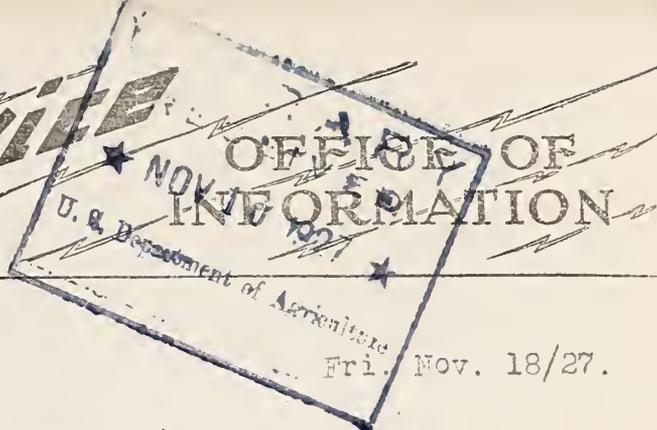
HORTICULTURIST: Yes, but it is no kin to either alligators or pears. "Alligator" was about as close as the early American growers could get to the Spanish pronunciation of the name for the avocado and as it resembles the pear in a general sort of way, they wished that name on it. But it should be compared with the olive rather than the pear. It is chiefly a salad or a relish rather than a fruit in the ordinary sense.

STEVENS: Do you think it will ever amount to much in this country?

HORTICULTURIST: You should see the way they go for it in tropical America! It is one of their most important food crops. Down there they consider a few corn cakes, a cup of coffee and an avocado a real meal --- and, it is. It ranks very high in food value. You ask me if "I think it will amount to much." I want all of you men here to mark my word, before many years, the avocado will take its place in the front ranks.

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U. S. RADIO FARM SCHOOL

(NOT FOR PUBLICATION)

Livestock and Dairy Meeting No. 7.

SUBJECT: Increasing Lamb Yields.

ANNOUNCEMENT: If you want to know about lambs, this is the place to find out. One of our members is a livestock expert from the Department of Agriculture ---- yes, the one over there by the desk. He's answering questions from some of our other farm club members now. Crowd in there close Sam and ask him -- all of us want to hear what he says.

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SAM: Just a minute, Mister Livestock Man!--I understand that extra good pasture or other feed for ewes at breeding time is a good way to increase lamb yields -----

EXPERT: Yes. That's so. Such a practice with certain breeds of sheep has resulted in a greater number of twins. That means more lambs to 100 ewes in the flock. The Bureau of Animal Industry has conducted experiments for more than 10 years to determine the value of that flushing.

SAM: What have they found out?

EXPERT: Well, the records to date show that the ewes which were flushed by the use of extra good pasture or by feeding grain or choice hay and grain during the breeding season gave birth to about 17 more lambs per 100 ewes than did the ewes that were not flushed at breeding time. The ewes in the experiments were South-downs, Shropshires and Hampshires kept at the Government farms near Beltsville, Maryland, and Middlebury, Vermont.

SAM: Well, what I want to know is just how to apply that to my own flock.

EXPERT: The experiments suggest that if you wish to increase your lamb yields, you can generally do so most economically by providing extra good pasture from about two or three weeks before the breeding season begins until the ewes have all been bred.

SAM: Huh! That's easier said than done ----

EXPERT: Of course, there are conditions which make it impracticable to provide an especially good pasture at breeding time. Whenever such a condition exists, you can flush the ewes by feeding grain on rather sparse pasture or choice hay and grain in case you have no pasture available.

SAM: That's just what I was driving at. I want to know just what is best to feed. There are differences in the value of different feeds, I guess?



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EXPERT: Oh, yes. Bluegrass pasture is considered excellent, but you can use many other succulent pastures. Some farmers say that clover is not entirely satisfactory. The experiments haven't gone far enough to give definite proof of any disadvantage in the use of clover, but the use of clover with mixed grasses or grasses and clover is probably better for flushing than pure, clover pastures.

SAM: I had in mind the feed to use in place of pasture?

EXPERT: Well, in the absence of pasture, you'll find choice alfalfa or clover hay or some other legume hay is most satisfactory. Soybean hay would be satisfactory. But timothy or prairie hays would be quite unsatisfactory. Don't use timothy or prairie hays.

SAM: How about grains?

EXPERT: A good grain for flushing ewes would be oats or a mixture of oats, bran and corn, equal parts by weight. It is seldom necessary to feed more than 1/2 to 3/4 of a pound of grain per ewe per day, unless the ewes are especially thin and are not gaining properly on that allowance. One pound of grain per ewe per day is regarded as a rather heavy feed at breeding time. You should watch breeding ewes that you are flushing to see whether or not they are gaining. You know, it is quite a help to know whether or not they're gaining. You can find that out by occasionally weighing them during the breeding season. Gain in weight is one of the surest signs of the actual flushing condition of the ewe. It seems that this gaining condition is associated with an increase in the number of lambs to which the ewe will give birth at lambing time.-----

SAM: You said awhile ago that flushing would work with "certain" breeds. Does it make any difference about the breed?

EXPERT: Oh, yes. The breed of the ewe may be quite an important factor. The Bureau of Animal Industry made a study of the records of lamb crops of breeds from 189 flocks. That study showed that the Dorsets were the most prolific and Rambouillets were the least prolific. However, some of the breeds were very nearly equal. The flocks that averaged from 151 to 158 lambs per 100 ewes were the Dorset, Lincoln, Oxford, and Southdown breeds. Those averaging from 141 to 148 lambs per 100 ewes were of the Shropshire, Hampshire, Cotswold, and Tunis breeds. The Rambouillet averaged only 122 lambs per 100 ewes. If your ewes are Rambouillets, the chances of getting results from flushing are somewhat more limited, than in the case of other breeds.

SAM: Do you mean you can't increase the number of twin lambs if your sheep are Rambouillets?

EXPERT: No. I never said just that, Sam. There is no proof that increased twin production would not be possible with Rambouillets. In fact, there is some indication in the experiments that there is a possibility of some increase even with Rambouillets. However, sheep of the Southdown, Shropshire and Hampshire breeds seem to have responded more readily with extra feed at breeding time. The chances are better with them.

SAM: Well, how about breeding ewes and rams that were born as twins or triplets? Won't they be more likely to produce twins, in their turn, than ewes born as singles.



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EXPERT: That very question was taken up in the experiments. As far as they have shown, however, there is no significant indication that twins or triplets are any more likely to produce twins or triplets than sheep born as singles, if you confine the study to a single breed.

SAM: Well, flushing may be all right -- but I have my doubts --

EXPERT: Why? Doubts about what?

SAM: Doubts about it being worth while. More lambs may mean more money, but I've heard some farmers claim it didn't.

EXPERT: You mean, some farmers claim that the lambs born as singles are more likely to be heavy lambs at market time?

SAM: That's the idea.

EXPERT: Don't let that worry you. The Bureau of Animal Industry's experiments show that there is no material difference in the size of twins and singles when they are fully developed. Although at market age twin lambs may not weigh as much as singles the difference in weight per lamb has been small when compared with the total weight of twins per ewe in contrast with the total weight of single lambs per ewe.

SAM: You mean that two lambs born twins may each be smaller than one lamb born single, but the two taken together are much heavier than one single lamb?

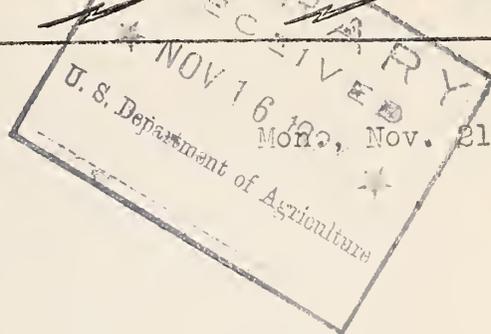
EXPERT: Yes.

SAM: Then you would advise me to feed for twins?

EXPERT: Under farm conditions reasonably favorable to sheep raising, there certainly should be more profit in twins than in single lambs, when you are producing them for sale as slaughter lambs.

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U. S. RADIO FARM SCHOOL

Crops and Soils Meeting No. 8.

SUBJECT: Seed Potato Certification.

ANNOUNCEMENT: Here we are in the old school-house again. We meet here three times a week to talk over farm problems. One of the members of our club here is an expert of the Department of Agriculture. He gives us the Department's findings on things. There he is now. ----- If you want to ask about that seed potato certification, go ahead. Crowd down front, we all want to hear what he has to say.

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WALTERS: Pardon me --- but could you tell me just what "certified seed potatoes" are?

EXPERT: Well, certified seed potatoes are potato seed stock which is grown under careful supervision in isolated fields and then is inspected and passed by accredited state agencies as meeting certain accepted standards.

WALTERS: What kind of standards?

EXPERT: Oh, standards of varietal purity, high productive capacity, and freedom from disease.

WALTERS: Are certified seed potatoes any better than those not certified? I've heard potato growers claim that certified seed doesn't produce as good a crop as uncertified stock.

EXPERT: I dare say, you haven't heard so much of that in the last three or four years. There's been a rigid tightening up on seed potato standards by those in charge of the certified seed potato inspection services of the various states. Over 11,000 actual tests of the two classes of seed stock show that the average increase in yield is more than 46 bushels to the acre in favor of certified seed.

WALTERS: Do certified seed bring better prices than uncertified seed?

EXPERT: Yes, they do. Right now there is a keen demand for certified seed potatoes. The best stocks command a handsome premium over uncertified seed.

WALTERS: How long have they been certifying seed potatoes?

EXPERT: Certification began in this country 14 years ago. Maine, New York, and Wisconsin were the States that started the practice.



WALTERS: Do you think it will last?

EXPERT: Oh, yes. Certification has come to stay. Last year 32 of the central and northern States had certifying agencies. Nearly five million bushels of seed were certified during the year.

WALTERS: Who has charge of the certifying?

EXPERT: The agencies which inspect and certify seed stocks, as well as the standards used in the work, vary in the different states. The state departments of agriculture, the state agricultural experiment stations, and the potato growers' associations are the principal seed certifying agencies.

WALTERS: Is there any charge for inspections?

EXPERT: A fee is generally charged to cover the cost of the work. It's usually based on the acreage involved.

WALTERS: How do they mark the certified seed?

EXPERT: Genuine certified seed potatoes should have a tag issued by the state certifying agency attached to each sack. The tag should state that the seed potatoes contained in the sack meet the accepted state standards. You growers should be on your guard against fake tags. There have been some seed potatoes sold with tags closely resembling the state tags and claiming that the seed were certified when they were not.

WALTERS: You say the certified seed are certified as being relatively free from certain diseases? What diseases?

EXPERT: Well, the number of diseases considered in certification, especially the so-called virus diseases mostly carried by insects, has been increased from two, mosaic and leafroll, in 1923, to six at the present time. Now they consider mosaic, curly dwarf, leafroll, spindle tuber, witches' broom, and yellow dwarf. But in addition to the virus diseases the standards cover scab, Rhizoctonia, black leg, wilt, wart, and weak plants. From a horticultural standpoint, the variety must be true to name; free from varietal mixture; vigorous and productive. The tubers must be reasonably true to type, not oversized, and free from serious injury either of insect, disease, or mechanical origin.

WALTERS: Are there any regulations as to planting?

EXPERT: Oh, yes. Planting regulations include seed potato treatment for tuber diseases like scab and Rhizoctonia. In some states, certifiable fields must not adjoin non-certifiable fields; so as to cut down the chances for virus diseases spreading into certifiable fields. Rotation is also recommended to keep out any volunteer diseased plants and fields for certification must be free from weeds and sprayed for control of insects and fungous diseases.



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WALTERS: Those sound like pretty thorough regulations; --- but I believe you said, the standards vary in different states?

EXPERT: They do. But they vary on some things more than on others. For instance, although the standards for maximum tolerance of virus diseases vary in different states, there is a tendency toward uniformity. In 1925 the maximum allowance for total virus diseases at the first field inspection was 5 per cent in 14 states and 4 per cent in 1 state. In the same year for the same diseases at the second field inspection it was 5 per cent in 10 states, 3 per cent in 4 states, and 4 per cent in 1 state, as shown in reports from 15 states. Now in the case of standards for maximum tolerance of total diseases including virus diseases and black leg, wilt and Rhizoctonia there is less uniformity because in some states and sections such diseases as Rhizoctonia are not considered as important as in other sections.

WALTERS: How many field inspections are made?

EXPERT: Most states require two field inspections. All diseased plants within the maximum tolerance must be removed before certification is granted. Then at the third or bin inspection, the inspector makes observations on tubers regarding scab, Rhizoctonia, shape and grade. If the potatoes fail to meet the standards, which provide for a maximum tolerance of 10 per cent moderate infection for each of common scab and Rhizoctonia, removal of all rot, spindle shaped and small as well as oversized tubers so as to conform to an equal or better grade than U. S. No. 1., certification will be refused. During the past 14 years, the standards for seed potato certification have tended to become more uniform and more rigid. Lately considerable progress has been made toward a better knowledge of mosaic, leaf roll, spindle tuber and other virus diseases from field conferences by inspection officials so that there is now greater uniformity in field inspection than heretofore. It is very essential that the standards should be just as rigid as experience shows to be of advantage for the potato seed industry.

WALTERS: If they keep getting the standards more rigid, they'll cause a shortage of high-grade certified seed potatoes, won't they?

EXPERT: Better have a shortage due to rigid standards than an over-production of inferior stock due to easy standards. But it's now generally recognized that the future success of seed potato certification is largely dependent on the painstaking efforts of a small group of especially careful growers who will produce foundation stock which will serve as the source of seed supply of a large group of growers who will produce the commercial stock of certified seed potatoes.



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9-23-27

U. S. RADIO FARM SCHOOL

Wed., Nov. 23, 1927.

Farm Economics Meeting No. 8.

SUBJECT: The Farm Budget.

ANNOUNCEMENT: We meet here in the old-school house three times a week. Wednesday is our day to talk over the business phase of farming. We swap experiences and look over the books, as it were. That Department of Agriculture man over there is a big help. He gives us the Department's records on these things. Somebody is asking him something now. Let's mosey over and hear what's up -----

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HOLTON: What I want to know is: Just what is a budget? ---

EXPERT: Well, it usually means a plan for future using or spending. In farming, budget means a plan for using the land, man labor, horse work, equipment and other resources that the farmer has to work with. It includes the plan for the system of farming for the coming year. It is a carefully worked out estimate of how well a particular combination of crops or combination of crops and livestock will pay. The budget should show the number of acres of the different crops and the number of head of the different kinds of livestock. The budget should also show the expected crop and livestock production, the expected feed requirements, the cash expenses, and receipts for the particular system contemplated.

HOLTON: Just how would you go about making a budget?

EXPERT: First, you should record the acreages of the different crops you expect to plant and the amount of the different crops it seems probable you'll produce.

HOLTON: Then what?

EXPERT: Then, the next step is to estimate how much of the production of the different crops you will need at home, how much to feed the livestock, and how much you will have to sell. Then you can set down the number and kind of livestock you intend to keep. Next put down the amount of the different kinds of feed, the stock will need. Right there, it will usually be advisable to compare data showing the feeds on hand at the beginning of the year, the crops to be grown for feed, and the feeds you expect to need. Generally, before a cropping program and a livestock program are finally decided upon, you will have to make adjustments in first one and then the other, until you find a livestock program adapted to a particular cropping program. When you have put down the kind and numbers of livestock you plan to have, you should also indicate the quantities of the livestock and livestock products you expect to use at home and the quantities you expect to sell.



Now then, after that you should record the expected value of the crop and livestock products you will have to sell; and the expected cost of the feeds, seeds, fertilizers and other materials you will have to buy. On the expense side, you should also include estimates for labor, new machinery and repair, new fences and fence repair, building repair, taxes, farm insurance and other overhead items.

HOLTON: How you going to tell in advance what crops and livestock will sell for? It looks like to me that that is counting your chickens before they are hatched.

EXPERT: Yes, certainly. But before you decide on prices, you should study average prices, price trends, and the present price situation. And be careful not to give too much weight to the prices of the present or immediate past. Remember prices of farm products fluctuate widely from year to year and the changes are seldom uniform.

HOLTON: Where are you going to get all that price information?

EXPERT: The Outlook Reports issued by the United States Department of Agriculture and some of the colleges of agriculture, discuss the probable trends of prices during the coming year for each of the principal farm commodities. The Federal Outlook Report is followed by an Intentions-to-Plant Report which carries information as to farmers' planting intentions for the principal crops. Reports showing farmers' hog breeding intentions are issued in June and December. Similar reports are issued from time to time for other classes of livestock and crops. The Agricultural Situation is issued monthly by the Department. It carries the general resume of conditions throughout the country and data showing price trends during the past few years. Crops and Markets, another monthly publication of the Department, carries information as to the acreage of crops planted and harvested, the condition of the crops during the year, the number of different classes of livestock on farms, the amounts of different products marketed and on hand and other information of that kind. Foreign Crops and Markets, issued weekly, gives information as to conditions of crops and livestock in foreign countries, that compete with crops and livestock produced in the United States. There are also bulletins available which give the results of careful studies of the factors which affect prices in certain farm commodities. The United States Department of Agriculture and some of the State Colleges of Agriculture have made a number of such studies.

HOLTON: You'd have to study out production, too, to find out the yields that could be reasonably expected; say, with different amounts of seed and fertilizer.

EXPERT: Oh, yes. You should consider your own experience, that of your neighbors, and information you can get from Federal and State bulletins. If you make a careful study of such information, you will have a basis for conclusions as to crop yields and the quantities of different kinds of feed



normally needed to produce 100 pounds of pork or to put 100 pounds of gains on steers, or to keep a cow or a horse a year. A similar study of the price information will give you a basis for conclusions as to the prices which are likely to prevail during the coming year and years just ahead.

HOLTON: When can you do all that?

EXPERT: December, January, February, and in some sections March are the budget making months in most parts of the country. Those are the months generally when farmers have most time for uninterrupted thinking.

HOLTON: Well, just what good is the budget going to do. Supposing things don't work out that way?

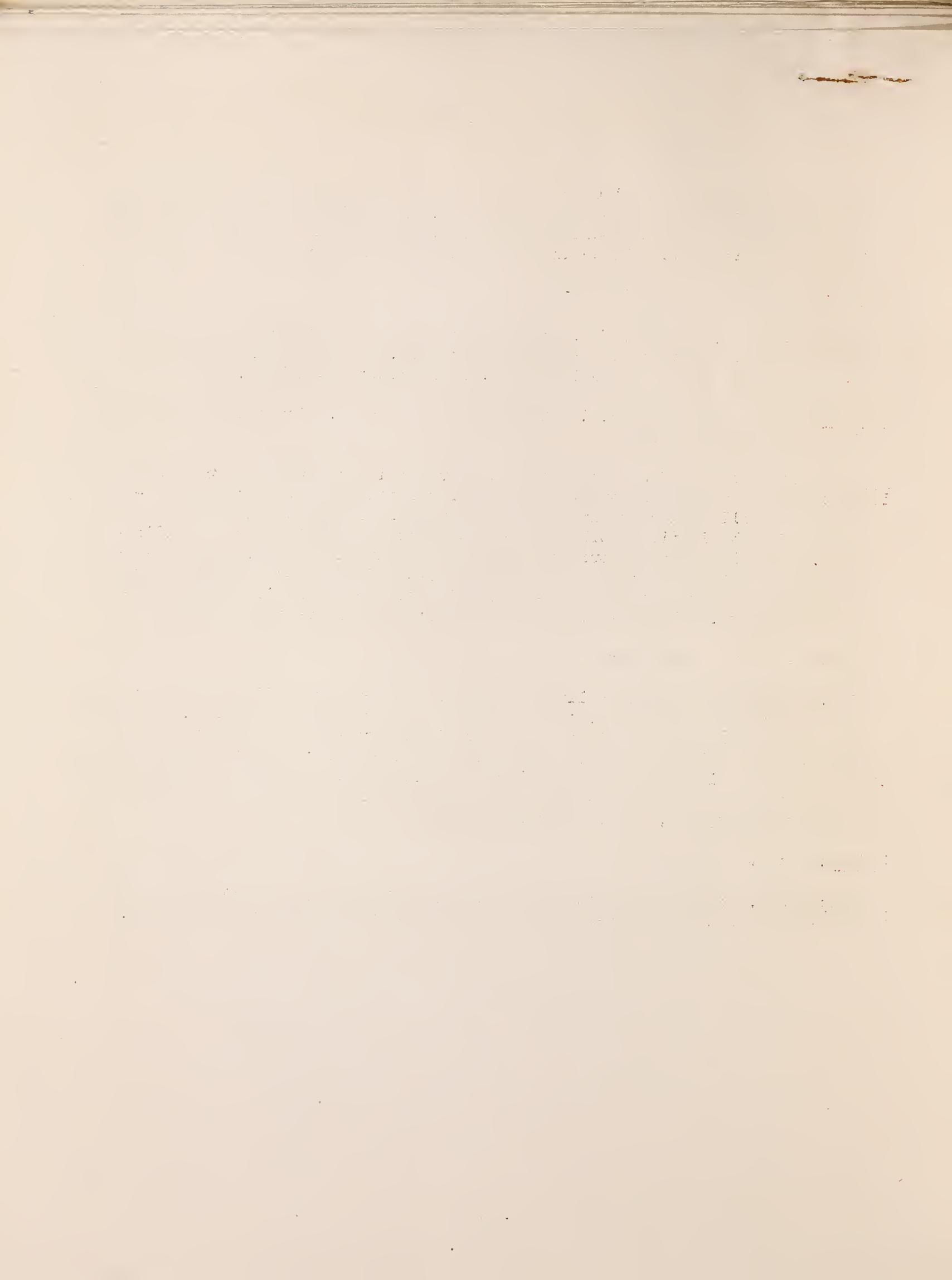
EXPERT: The purpose of working out a farm budget is to find the crops and livestock best adapted to your farm and your conditions at this time. Generally, that will mean comparing the system you are using now with other systems. You should first work out the budget for the system you are following now. Next look around your community for combinations of crops and livestock that seem to be giving good results on other farms. Work out budgets for such of these systems as seem practicable for you in the light of condition on your farm. Then compare the budgets of the different systems.

HOLTON: How you mean compare them?

EXPERT: Consider them critically in order to find out how well the principal crops are adapted to the area, the effect of each system on the fertility of the soil, the kinds of markets that are available for each of the marketable products, how nearly the feed crops provide a balanced ration for the livestock if the system includes livestock. Also how well the crops and livestock fit together and how well the non-marketable products such as pasture, straw, stover, skim milk, etc, are used with each.

HOLTON: And then what?

EXPERT: Then, with those facts and the returns that may reasonably be expected from each in mind, select one of the systems as the system to follow.



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U. S. RADIO FARM SCHOOL

Friday, Nov. 25.

(NOT FOR PUBLICATION)

Livestock and Dairy Meeting No. 8.

SUBJECT: Preparing for Ice Harvest.

ANNOUNCEMENT: - This is our regular day for talking over livestock and dairy problems in our club that meets here in the school-house. We meet three times a week. The other days we talk about other things. Friday it's either livestock or dairy. We try to have a man from the Department of Agriculture on hand to give us the expert advice. Let's take a seat over there by the stove and listen to what's going on ----

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EXPERT: Well, men, now's the time to get ready for spring!

BRUNTON: Spring? You're rushing the season, it seems to me. What do you mean get ready for spring?

EXPERT: Why, getting ready for the warm weather battle with bacteria.

BRUNTON: There's not so much trouble this time of the year with high bacterial counts. We never lose much on account of sour or spoiled milk in the fall.

EXPERT: No, you don't. That's just the point. But you know the old saying: "In times of peace prepare for war." Next spring, when warm weather begins to promote the fast growth and development of bacteria, and you get to losing money on that account, you'll want to be prepared ---

BRUNTON: How you mean?

EXPERT: I mean that where you can harvest natural ice, all of you dairy-men should store plenty of ice for the spring and summer. Ice is almost necessary to produce and market high-quality milk and cream. Proper cooling and cold storage on the farm are the greatest factors in keeping down the bacterial content of milk between the time it leaves the cow and the time it reaches the consumer.

BRUNTON: In other words, you think it's time to repair and clean out the old ice-house, so it will be ready to use when it's needed?

EXPERT: Yes, or in case you don't have an ice house, it's time to build one.

BRUNTON: That's what I'll have to do. Draw me a diagram there on the black-board-- a plant of a good ice-house ---



EXPERT: I'll do better than that. I'll tell you where you can get plans, you can have right with you. Just write to the United States Department of Agriculture for Farmers' Bulletin 1078 on "Harvesting and Storing Ice on the Farm."

BRUNTON: Farmers' Bulletin 1078. Thanks. I'll write for that. Where's the best place to locate an ice-house, anyway?

EXPERT: Well, locate it in a shady place near the dairy house --- and where there is good natural drainage. If you can build your ice-house on sloping, porous ground, natural drainage should be all you need. But if you build on a clay soil, you'll have to provide artificial drainage. You know, if you don't remove the water from the melting ice by drainage, the ice will melt faster.

If you do not have an ice pond on your farm, you had better provide yourself with one if possible. And be sure the supply of water is pure. Prevent drainage from contaminating sources, such as barnyards and refuse heaps. Clear the pond or stream of vegetable matter; otherwise it will be frozen in the ice. And when the pond is freezing, keep the ice surface clear of snow. Snow, you know, retards freezing.

BRUNTON: How you go about cutting the ice?

EXPERT: Mark the surface off into cakes the size you want --- and be sure that the lines form rectangles. Cut out a strip of ice the width you want. Then force the strip under the surface of the ice field, so as to open up a channel to the landing. Saw off big cakes and float them to the landing, where you can cut them into smaller cakes.

BRUNTON: You need a lot of special tools, don't you?

EXPERT: No, all you need for harvesting ice on the average farm are two saws, 2 pairs of tongs, 2 ice hooks, 1 pointed bar and 1 straight board for marking.

BRUNTON: How about packing? You put a layer of sawdust in the bottom of the ice-house first, don't you?

EXPERT: Yes, you should place a layer of dry sawdust about a foot thick in the bottom of the icehouse. If you put ice directly on the ground it will melt fast, because moist ground is a fairly good conductor of heat. Have the sawdust a few inches less deep in the center than at the outer edge, so the cakes will have a tendency to slide toward the center instead of toward the walls. Place the cakes of ice close together so the mass will be as tight and solid as possible and so prevent cracks and openings that let the air circulate. You can pack the ice cakes closely, if they are perfectly cut rectangular cakes. That emphasizes the importance of special care in cutting so the cakes will be the same size. When the cakes of ice are irregular in size the best plan is to fill the openings with small pieces of ice. You want the layers to fit tightly one on top of the other. To be sure that they do fit closely, never let any broken ice stay on top of or



stick out above the ice cakes. The sides of the mass of packed ice should also be smooth. Trim off any projecting pieces before you cover the mass with insulation.

BRUNTON: How tight do you pack the sawdust?

EXPERT: That's a good question, Brunton. Most of the materials used for insulation give the best results when packed to a density of from 8 to 10 pounds per cubic foot. The object of insulation is to prevent the outside heat from getting in and melting the ice. The value of the insulating materials depends on the density to which they are packed. If they are packed too loosely, they will let the air circulate through. If they are packed too closely, they will conduct heat easier.

If you use sawdust or mill shavings as insulators, leave a space of at least 12 inches between the stack of ice and the walls of the ice-house. Fill that space with dry sawdust or shavings as you go along. Commercial insulation is more efficient and will last longer than either shavings or sawdust, but it is more expensive. Wooden houses insulated with sawdust or mill shavings should be ventilated. Ice-houses with commercial insulation and a cement finish need no ventilation.

BRUNTON: When you just want to cool cream, how much ice does it take?

EXPERT: When cream only is to be cooled, allow at least one-half ton of ice per cow. For cooling milk, allow  $1\frac{1}{2}$  tons per cow. This will leave a margin for cooling butter and buttermilk and for making ice cream, and things like that.

BRUNTON: How much ice does it take to make a ton?

EXPERT: Well, a cubic foot of ice weighs about 57 pounds. In storing ice, it is customary to allow from 40 to 50 cubic feet per ton for the mass of ice. Whenever possible, the ice house should be built in the form of a cube. Now then, allowing at least 12 inches between the ice and the wall of the ice-house and 12 inches beneath and above the ice, it's easy enough to figure how much ice any given ice-house will hold.

Ice is practically a necessity wherever milk or milk products are handled. That Farmers' Bulletin 1078, I mentioned will tell you all I've told you and more.

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9-23 FS

Southern U. S.

Mon. Nov. 28, 1927.

U. S. RADIO FARM SCHOOL

(NOT FOR PUBLICATION)

Crops and Soils Meeting No. 9.

SUBJECT: Southern Pasture Suggestions.

ANNOUNCEMENT: Monday, you remember, is the time we talk over crop questions in this club of ours which meets in the old school-house. It is a big help, swapping ideas the way we do; especially since we have an expert from the Department of Agriculture to check up with.-- Yes, the man over there talking now.--Let's go over-----

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EXPERT: -----Why, it is the greatest hindrance there is to the development of stock raising in the Southern States! --

COLEMAN: What's the biggest hindrance? -----

EXPERT: The condition of pasture land. Less than 20 per cent of the pasture land in the Gulf and South Atlantic States is improved pasture. We need improved pastures! In the Corn Belt States over 80 per cent of the pasture land in farms is improved pasture.

COLEMAN: Our grasses make good pasture, don't they?

EXPERT: No, the native grasses here are good pasture only during the early spring. Don't you know that it takes 10 acres of native broom sedge and wire grasses to supply one full-grown cow with feed for 8 or 9 months. On improved pastures of bermuda and lespedeza or carpet grass and lespedeza, you need 1 or 2 acres to support a cow --- and, not only that, but the gains in flesh are 2 to 4 times as big as those you get on the native grasses.

COLEMAN: I didn't realize there was that much difference. What kind of land is best for "improved" pasture?

EXPERT: Well, where you can, you should select low, moist land along a creek or river bottom for your pasture. Often land that is too wet for ordinary cultivated crops such as cotton and corn may be found on the farm. That usually makes the best pasture; especially if the wettest parts are drained. Land such as that is particularly suited to carpet grass.

COLEMAN: What about pastures in rough country?

EXPERT: Well, in rough, mountainous areas, the valley and cove lands are good pasture soils. But avoid stony, gravelly ridges and bench lands as far as



possible. You had better devote such land to growing timber. Also swamp lands unless they can be drained.

COLEMAN: How about pasturing in timber?

EXPERT: Oh, never try to establish a permanent pasture in heavy timber. A few clumps of trees left on the higher points in the pasture to furnish shade for the livestock are valuable, but a general distribution of trees over the entire pasture will interfere with the proper development of the grasses. Before seeding the pasture, you should remove all underbrush. But after seeding don't burn off the grass. The practice of burning the grass on cutover lands each year checks the spread of useful pasture plants. You should prevent fires by burning out a fireguard between two furrows plowed around the area intended for pasture. Improved pastures should also be fenced to keep out stray animals and confine those let in to the pasture so they will keep it grazed closely. Close grazing, you know, benefits the tame turf-forming grasses and discourages the wild ones.

COLEMAN: What kind of grass is the best for pastures?

EXPERT: A mixture of grasses and legumes is almost invariably to be preferred over a pure stand of any plant. For moist and rather sandy soils in the Coastal Plain, carpet grass, Dallis grass, and Lespedeza are the most useful pasture combination.

COLEMAN: Carpet grass is not hardy much north of the latitude of Atlanta, Georgia, is it?

EXPERT: No. In the Piedmont to the north, and on the heavier clay and silt soils, and the black prairie soils of the Coastal Plain, bermuda grass, Dallis grass, and lespedeza are preferable to the carpet grass mixture. White clover, bur clover, and black medic are winter growing legumes which may be added to the mixture on the heavier and better soils. They will lengthen the grazing season of the pasture and add much to its value in the early spring.

Carpet grass, Dallis grass, and lespedeza are already established on much of the land of the Coastal Plain. They only need encouragement to form a good pasture. The same is true of bermuda grass and lespedeza on the heavier soils of the Coastal Plain and in the Piedmont to the North. If those plants are not growing in your field, or if they are just growing at widely scattered points throughout the fields, you had better sow them. In any event, seeding will cut down the time it will take to get a good pasture. It will prove profitable in most cases.

HUNTER: In just what proportions do you use the different grasses you mentioned? And how much to the acre?

EXPERT: For a carpet grass pasture, here's the mixture you should sow; and the quantity of seed per acre: Carpet grass, 8 pounds; Dallis grass 4 pounds; and Lespedeza, 16 pounds. You should sow that mixture some time between February 1 and March 15 and harrow it in lightly.



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HUNTER: Do you have to plow or disk the land first?

EXPERT: Sometimes that's not necessary. Good results are often obtained by clearing off the underbrush, mowing the tall native grasses and weeds, and sowing the seed on untilled ground. The lespedeza will be ready to graze by June and the grazing after that will benefit the carpet grass and Dallis grass by keeping down the native grasses. Now here are the quantities of seed per acre you need for the bermuda grass pasture mixture: Bermuda grass, 5 pounds; Dallis grass, 4 pounds; and Lespedeza, 16 pounds. Don't sow the Bermuda grass until about cotton planting time, as it does best in a warm soil. Have your seed bed smooth and firm and, if possible, cover the seed by rolling. On fertile soils it will pay to seed 2 pounds per acre of white clover in the Bermuda grass mixture the next winter after the pasture has been established.

COLEMAN: My stock don't seem to like Bermuda very much ----

EXPERT: Pasture grasses often become unpalatable if you let them grow up and head cut. Close grazing will prevent that.

COLEMAN: Suppose you don't pasture enough stock to graze close?

EXPERT: In that case, you should mow the pasture once or twice a year. Most of the complaints regarding the unpalatability of bermuda grass would be avoided if it was mowed occasionally, so the animals could graze on the young and tender growth. You should also remember that supplementary pastures of Sudan grass, napier grass, sorghum, cowpeas, velvet beans, and kudzu in the summer, and oats, rye, and vetch in the winter, are desirable to provide feed when the permanent pastures are unproductive on account of drought or cold weather.

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Northern U.S.

U.S.D.  
Mon. Nov., 28, 1927.

U. S. RADIO FARM SCHOOL

Crops and Soils Meeting No. 9.

SUBJECT: Red Clover Varieties, Diseases, and the Seed Staining Law.

ANNOUNCEMENT: Monday, you remember, is the time we talk over crop questions in this club of ours which meets here in the old schoolhouse. It is a big help, swapping ideas the way we do; especially since we have an expert from the Department of Agriculture to check up with. Yes, the man over there talking now --- Let's go over -----

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BOYD: What's the idea of coloring red clover seed that is imported?

EXPERT: That's to show that it was grown in a foreign country. All imported seeds of alfalfa and red clover must be colored to show that they were grown in a foreign country. That's a requirement of the Federal Seed Act, which also sets up definite requirements of freedom from adulterants, weed seeds and dead seeds for all imported plant seeds subject to the Act.

BOYD: What difference does it make if they are grown in a foreign country?

EXPERT: It makes a lot of difference, sometimes. For instance, if ten per cent of the red clover seed is stained red it means that such seed will almost certainly fail to make a crop in the northeastern United States. You see, the Secretary of Agriculture is directed to determine the general adaptability for agricultural use in the United States of alfalfa and red clover seed grown in foreign countries. Whenever, he finds that such seed is not adapted to general agricultural use in the United States, ten per cent of the seed must be colored red before it can be brought into the United States. Seed of red clover from Italy must show ten per cent red coloring.

BOYD: How about seed from other countries.

EXPERT: Red clover seed grown in Canada is colored one per cent violet. Red clover seed from any of the other countries is colored one per cent green. Most of the red clover seed being imported now comes from France and is colored one per cent green.

BOYD: What do those colors mean?

EXPERT: Stains of other colors than red indicate that such seed is imported, but do not mean that the use of it is wise or unwise. Success may follow the use of imported seed in one place while failure may follow in another. Farmers should



learn to note the results from imported seed.

BOYD: Are the European red clovers not the same as the clovers we have here?

EXPERT: No. You know, there are two types of red clover used in the United States; the medium, early or June red, and the mammoth. The corresponding European types are known as early or double cut and late or single cut. But in neither case are the European red clovers the same as the American.

BOYD: What's the difference?

EXPERT: Well, you realize, differences in plants may show on the outside, in form, hardiness, color, etc; or the differences may be internal and show in hardiness and resistance to disease, etc. American clovers differ from European clovers both ways. American red clover is rough hairy; that is, the hairs stand out at right angles to the stems. European red clovers are smooth or have the hairs close pressed to the stems. This character is best seen on the stems just beneath the flower head. It is not apparent on the young plants before the stems have formed. Most of the European clover seed that has come to America in the past has come from France and Italy. Some has come from South America. It is like the French variety in appearance.

BOYD: Where is most of our American seed grown?

EXPERT: Most of our domestic red clover seed is produced in the Ohio and Mississippi valleys, and in the region of the Great Lakes. Some comes from the irrigated sections of Idaho and eastern Oregon and Colorado, and some from the Valley of the Willamette River in western Oregon.

BOYD: And you say that the European red clover seed is not as hardy as ours?

EXPERT: Well, extensive trials of seed from European and South American sources have shown that in such places as Iowa, Minnesota, and New York, where the winters are severe, the European clovers are not so winter-hardy as the American clover. At least, the European clovers from the countries exporting seed to the United States are not so hardy as ours. At Ames, Iowa, the French and South American have winterkilled 40 to 50 per cent, and the Italian 90 per cent, while the American lost only about 15 per cent. The yield of hay from French seed has consequently been lower than that from American seed. In Ohio and Pennsylvania the yields from French seed have been practically the same as from American seed, but the yields from Italian seed have been very low; often a complete failure has resulted from the use of Italian seed.

BOYD: All on account of difference in climate?

EXPERT: No. Two other things help account for the failures.-----

BOYD: What are they?

EXPERT: Diseases and insects. In the southern part of the Ohio Valley, in Maryland and in Virginia there is a clover disease called anthracnose. This



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disease attacks all foreign red clovers more than it does American red clover. The effect is most evident after cutting the first hay crop. At that time, foreign clovers often die outright. If they survive, they usually produce an inferior second crop.

BOYD: How far north does that disease go?

EXPERT: It is probably a serious factor as far north as Central Ohio and Illinois, but its exact distribution is not yet known. In Tennessee a variety has been selected that resists anthracnose. It is known as the Tennessee anthracnose resistant strain. Natural selection has also operated in Maryland and Virginia to develop strains that are better there than other American or than imported seed. By sowing red clover in August rather than in spring, the attacks of this disease may be avoided during the first summer, and a good hay crop may be had even when imported seed is used.

BOYD: How about mammoth clover seed imported from Europe? That is all right isn't it?

EXPERT: True mammoth clover seed is produced only in the United States. Seed is sometimes imported from Europe under the name Sapling and is sold as mammoth. It is nothing but common European red clover. It should never be seeded when mammoth red clover is wanted.

In many cases imported red clover seed, except Italian, can be used. But, if you use it, you should always note what you are using and watch how it turns out under your own conditions.

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U. S. RADIO FARM SCHOOL

Wed., Nov. 30/27

Farm Economics Meeting No. 9.

SUBJECT: Outlook Reports.

ANNOUNCEMENT: Last Wednesday at our farm club meeting in the school-house, we talked over farm budgets. The Department of Agriculture man told us about a number of reports we could get hold of to help figure prices in making plans for the future. Some of the men here want some more information along that line ----Ah, there comes the Department man now --- Look at them gathering around him ---- ----

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HUNTER: ---- You say the Department of Agriculture issues reports telling farmers what the probable market conditions will be, when they are ready to sell?

EXPERT: --- Yes. As you all know, your profits from farming depend to a large extent upon the decisions you reach as to what prices your different products will probably bring. Very few of you could get together all the facts you need in making such decisions. It would be too much work and cost you too much. It would be more practical for you to pay some central agency to do the work --- but you don't have to do that. The Department of Agriculture's outlook reports are prepared for the sole purpose of helping you farmers with your price problems.

HUNTER: Just how do you mean?

EXPERT: Well, the outlook information shows the trends that prices are likely to take during the year. If you study the outlook reports carefully, they should help you in planning your production. For example, a farmer in the spring wheat country may have a field that can be planted either in barley or in wheat. Which to plant is the problem. From the outlook report, he can find out the supplies of barley and wheat being carried over from the previous year. Also the probable demand for barley as a feed for livestock. The indications for wheat production in foreign countries and industrial conditions in the United States and in foreign countries are taken into consideration in these reports. If these conditions show a more favorable outlook for barley prices than for wheat prices, that farmer would plant his field in barley instead of wheat.

Or a farmer in Western Kentucky may be undecided whether to plant a field to strawberries or tobacco. The acreage of strawberries planted in areas that would market at the same time his crop would be ready and the probable industrial condition in the cities might indicate a favorable price outlook for strawberries; while the supplies of tobacco in the warehouses

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and storerooms of the world, and the probable production of a similar type of tobacco in other sections of this country, and in foreign countries, and the tendencies in the habits and preferences of tobacco users, may be such as to indicate a relatively unfavorable price outlook for tobacco. Under such conditions the Western Kentucky farmer might find it advisable to plant at least a part of the usual tobacco acreage in strawberries.

HUNTER: Are all those things shown in the outlook reports?

EXPERT: Oh, yes. For example, in the case of tobacco, the amounts of the different types of tobacco on hand as compared with previous years, the production during the past year as compared with previous years, the developments in producing areas in foreign countries, changes in the tastes and habits of consumers both in the United States and foreign countries are all considered in making up the outlook report.

HUNTER: And do those reports take into consideration the effect of other crops? Sometimes the outlook for one crop depends to some extent upon the outlook for other crops.

EXPERT: Yes, all those things are taken into account. In the case of a feed crop such as corn, for instance, the number of hogs, beef cattle, dairy cows and other livestock that will probably be on hand when the corn crop not yet planted is matured and ready for consumption are taken into account. Consideration is also given to the fact that oats, barley and other feed crops can be used as a partial substitute for corn. If corn should be scarce and high in price while the supplies of other feed crops are plentiful, livestock producers who must buy feed will use less corn in the same way, in arriving at a sound judgement as to the outlook for livestock production, the prospective supply of feeds is considered. Because of such relations, the reports for the different commodities are compared before any are completed.

HUNTER: Do the specialists in the different crops get together in making out these outlook reports?

EXPERT: The outlook reports for the various agricultural products are prepared by committees. Each committee, composed of specialists in the Department studying the production and domestic and foreign marketing of particular commodity, assembles all available information on the present supply of the product, and the demand for it, and the trends of production and consumption. After a careful study of this information a conclusion is reached as to the outlook for the production of this commodity during the coming year.

HUNTER: You mean to say that the outlook on each commodity summarizes all available information which will help farmers plan their crop production so as to get the most and avoid as far as possible the overproduction or underproduction of any crop?



EXPERT: Exactly.

HUNTER: How many crops do they make outlook reports for?

EXPERT: Well, in January of each year a comprehensive report is prepared covering the outlook for all the commodities on which sufficient information is available. Then each summer special reports on the outlook for hogs, sheep and cattle are prepared, and a report on the outlook for wheat production is issued each fall just before the time of planting winter wheat.

HUNTER: You say the January outlook report is on "all the commodities on which enough information is available". How many is that?

EXPERT: Well, the general report on the agricultural outlook for 1923, issued in January, contains statements on 31 different commodities in addition to statements on the domestic and foreign situation, agricultural credit, and farm labor and equipment.

HUNTER: How long has the Department been issuing outlook reports?

EXPERT: Oh, since 1923.

HUNTER: Long enough to tell something about them, then, huh? Just how accurate are they?

EXPERT: Even the first reports were surprisingly accurate. Conditions worked out as expected about five times out of six. With more experience, the outlook reports have been much more accurate. The average in recent years has ranged between 90 and 95 per cent. Of course, it will never be possible to anticipate all future changes in markets, but the outlook reports do give farmers an insight <sup>on</sup> market trends in the future which is far better than any mere "rule-of-thumb" conclusions. Farmers all over the country say they are helpful in deciding upon the profitable thing to do in the way of planning crop production.

HUNTER: Where can you get those outlook reports.

EXPERT: Well, the outlook reports are distributed by means of radio press releases, talks, and special meetings. The newspapers of the country are furnished a condensed summary of each of the reports. They usually carry the reports in one form or another. You can get the complete reports by asking for them. They are printed as soon as they are prepared. In recent years representatives of the State Colleges of Agriculture and Agricultural Experiment Stations have come to Washington and helped prepare the January reports. After doing that, the State workers then prepare State outlook reports based upon the Federal reports and other data of local significance. These reports as well as the Federal reports are then sent out by the Extension agencies in the State.

