

carrots or mangels, which may be stored in cellars or basements and kept in good condition throughout the winter. Stave silos are inexpensive, and peas can be produced in great abundance. Thus, there is no reason why winter dairying should not prove very satisfactory in this section. A daily ration of fifteen or twenty pounds of alfalfa hay and from twenty to forty pounds of roots or silage, with four to six pounds of crushed barley, would be ample for a heavy milking cow during winter. Winter dairying will be found much more profitable than summer dairying. A cow that freshens in the fall and receives proper care and food will yield at least twenty-five percent more profit than she would if freshened in the spring.

Not only should the cow possess good dairy blood, but she should be properly raised from calfhood to maturity. The heifer calf should be taken away from its dam about twelve hours after birth. This is very important, for it has been estimated by careful observers that every day the calf is left with its dam up to a certain limit there is a loss of one dollar in the annual production of the cow. For the first two or three weeks the calf should be fed whole milk, after this gradually substituted with warm separator skim milk for the whole milk until the calf is wholly maintained on skim milk. Just as soon as the calf can be induced to eat grain it should be given a little crushed barley, or what is better, whole oats. This, with nicely cured alfalfa hay, should maintain the calf in excellent physical condition. In feeding skim milk, care should be exercised that the milk is sweet and warm, and fed from perfectly clean vessels. Dirty buckets, sour, cold milk, and the feeding of too large quantities are responsible for the wretched condition of many skim-milk calves.

Heifers should be freshened when about two or two and a half years old, and care should be taken that the first milking period is a good long one—at least eleven months. In this way the habit of persistent milking is established.

To dairy successfully, the dairyman must be well posted in his business; hence the dairyman must be a student. Good dairy books should be read, and above all, Hoard's Dairyman should be in the home of every dairyman. This publication is truly the gospel of modern dairying, and no beginner can afford to be without it.

Dairying and hog raising usually go hand in hand. Hog raising, however, can be conducted successfully independently of dairying. There is no doubt but that conditions are especially favorable for the industry in this county. Conditions here are quite similar to those of the San Luis valley in Colorado, where hog raising is carried on very successfully. In this valley the field pea is used extensively for fattening the hogs. These are what is commonly termed "hogged off," and it is reported that three, or four thousand dollars' worth of pork has been produced from a quarter section of land. The field pea should do well upon the irrigated lands of the Klamath Basin. With alfalfa pasture for growing hogs, and the field pea for finishing them for market, the industry should prove a profitable one.

Perhaps the most difficult problem presented by the industry is an economical method of winter maintenance of the breeding stock. This can be inexpensively done with roots and alfalfa hay. Carrots and mangels can be grown in great abundance, and these, with alfalfa hay, and in some special cases perhaps a very slight supplementary feed of crushed barley, the hogs can be carried through the winter in good condition. The aim should be to carry the smallest number of hogs possible through the winter and turn off everything available during the summer and fall. It would be a good plan to have the pigs farrowed early in the spring, so that they will be large enough to turn on the alfalfa when it is ready in the spring, so that the pigs will attain a good size by the time the peas are ready.

Good blood in the hog pays as well as it does in other classes of farm livestock. Thus, whatever breed is selected, a pure-bred sire should always be maintained at the head of the herd.

Agriculture in Klamath county should develop with leaps and bounds. The transportation problem has been solved and water has been brought to the thirsty soil. It now rests with the farmer to supplement these with modern methods of husbandry and thus develop a highly prosperous agriculture.

The meeting adjourned until 2 o'clock, when Professor H. H. Scudder, specialist in soils, field crops, dry farming and drainage engineering, discoursed on these subjects. Mr. Scudder said, in part:

The first impressions of a newcomer, such as I am, into the Klamath country are of great surprise at the immensity of the agricultural area found set among the hills here—the apparent richness of the soil, and the abundance of water on all hands, accompanied by what seems to be climatic conditions very favorable to a great crop production. A newcomer, particularly a land-seeker, should at first be greatly affected by the opportunities of profitable husbandry offered by this region. However, it must be remembered that in agriculture, as in all other businesses, there is nothing that speaks so loudly and convincingly to a prospective purchaser as the actual goods themselves, the results of the soil's possibilities. Of course, the more intensive farms of farming are still very new in the Klamath country, so perhaps it should not be expected that evidences of large crop productions should be found on every hand, but the barns and yards, crowded with stock and filled with forage and grain, the fields covered with closely cultivated crops, and the fences, rows clean, and the grain and forage crops in unbroken stands, are what make the most effective impression and convincing argument to an outsider. The great pos-

sibilities of soil, climate and water do not yet seem to be fully utilized here, nor perhaps even realized. Samples of grains, grasses, forage, garden and fruit crops examined during our brief stay here show exceptional quantities and possibility of heavy and exceedingly profitable production, yet in the field evidences of such production are not shown. Given such a splendid soil, and excellent climatic conditions, profitable crop production depends primarily upon the adaptation of the crops to the conditions of the region. The source and quality of the seed used is of the highest importance. This point cannot be too heavily emphasized in this valley, for here, as elsewhere, it is the one most commonly neglected, yet is the cause of greater losses to farmers here, as well as over the entire State, than any other one factor. The introduction and development of better varieties of wheat and barley seems to me a matter of immediate importance to this country here. There is no question in my mind that there are higher yielding varieties of both of these cereals than are now used here, as well as varieties of grain with better quality. Just what these varieties are only experiments can tell specifically, but the experiment stations in the Department of Agriculture offer every facility for getting these varieties into the country where farmers show an inclination to try them. In this connection, it must be remembered that no new varieties introduced here will show great advantages the first year or so, and this should not be a cause of discouragement. The great difference in elevation, in soil and climatic conditions make it necessary to persevere in the growing of a new seed until it becomes thoroughly acclimated, when its inherent superior qualities are bound to come to the surface.

While the native grass crops produced here are, in some cases, of the very highest nutritive quality, yet in practically a majority of this section the introduction of many of the common domestic cultivated grasses will lead to a much heavier production of forage of much better quality. There seem to be very few of the cultivated grasses which do not thrive here, but they seem to be grown in very restricted areas as yet. As far as I have seen, the alfalfa here shows a remarkable possibility, yet I understand that principally all of the seed is imported from lower elevations, and though alfalfa seed production here is excellent, yet none of it seems to be grown. There is no question that the introduction of hardier seed, such as the Montana Bloom, and the growing of alfalfa seed here as an industry will not only be highly profitable in itself, but would greatly improve both the quality and quantity of the crop as grown for feeding purposes. In connection with alfalfa growing, since this is a crop of long life, it is of immense importance that the land should be made thoroughly clean in preparation for seeding, and the greatest care taken to secure a close and even stand to avoid the spotty fields which year after year deduct from growers' profits because of the lack of a little initial care in collecting seed and the method of sowing. Other legumes, such as field peas and the vetches, are of great feeding value, and of particular importance in short rotation for maintaining soil fertility, should be widely grown here, as they are peculiarly adapted to the climatic and soil conditions. Of the possibilities in vegetable and fruit production I will not speak, but these special industries promise to be some of the greatest features of the future development of the country.

Given the best crop seed obtainable, production finally depends most largely in this section upon the methods of culture related to the best utilization of the water. To both the irrigator and dry farmer there is no subject so worthy of careful attention as that of culture for the conservation of moisture. To the man above the ditch this is at once apparent, but to the man below the ditch it is equally important, for, in the one case, the rainfall is scanty, and in the other case, the water is costly, and the profit in farming for both depend upon moisture conservation.

I cannot speak here in the limited space of the principles and practices upon which the conservation of moisture depends, but there is no doubt that in the near future this one subject will become of paramount importance and of vital interest both to the dry farmer and the irrigator farmer. As farming in this area becomes more intensive and the immense possibilities of the soil and climate are realized, upon the best utilization of the water, either from the canal or the rainfall will hinge the future prosperity of the entire region. When the methods related to these subjects are fully worked out and practiced here the value of lands and the density of population and the wealth of this great inland territory will be a matter of surprise to the whole coast.

NOTICE TO CONTRACTORS AND BUILDERS

NOTICE is hereby given that the officers of School District No. 11, commonly known as Pine Grove, seven miles east of Klamath Falls, on the Bonanza wagon road, will receive bids for the construction of a one-room frame school house and out-buildings. Plans and specifications may be seen at the office of the County Clerk of Klamath County or at the office of the district clerk, S. E. Icebice, in said district. Bids will be opened at the office of the County School Superintendent at 1 o'clock p. m., Saturday, September 18, 1909. Directors reserve the right to reject any and all bids.

T. M. CUNNINGHAM, Chairman.
Attest: S. E. ICENBICE, Clerk.

PRESIDENT KERR TALKS

Advocates Education of the Masses and Suggests Correspondence to Secure Information.

President H. D. Kerr of the Oregon Agricultural University addressed a good-sized audience at the high school auditorium Monday night. The Rev. Geo. T. Pratt presided. President Kerr was very much impressed with the remarkable possibilities of this section which he found during his brief stay here, as will be seen from the interview had with him by this paper, as follows:

"I consider that there is a very bright future for this part of the state in the agricultural line, with its good soil, ample water and good climate, which will support a large population. I consider that the immediate future offers the best opportunities in dairying, growing hogs, forage crops, including alfalfa particularly, peas, etc., and the cereals. Fruit will be grown here, but I think that will come later when more is known about the variations in the temperature of different localities in the hillsides, which localities will probably be best adapted to fruit growing. In the fruit line more information is necessary here, and varieties will doubtless be developed that will be especially adapted to the conditions of this section.

"There are some difficulties which will have to be overcome here. In localities where water is given for irrigation, an excessive amount will very likely be used, which is always harmful, resulting in damaging the land more or less by becoming water-logged, necessitating drainage later, sometimes at great cost. Much of this can be avoided if the people would be more sparing in the use of water for irrigation, and also better crops would be obtained. You have in your midst here experts who are informed regarding the work that is being done all over the United States in the Department of Agriculture. They are available always for advice and assistance in the work. Then, there is the experimental station at Corvallis, in which specialists are spending their entire time studying problems that are met in the development of agriculture, and they are always at the service of the people and glad to assist. I would suggest to the people here that they do not hesitate to use these advantages. Write to the director there for any information upon any subject, that they may be of assistance to the people here in overcoming any difficulty or problem that may arise, and the experts will always be glad to assist. The people ought to take advantage of the agricultural college at Corvallis. They need to be informed regarding the scientific principles involved in successful agriculture. They should break away from the old slipshod methods of the past and adopt mod-

ern agricultural methods. This section should give as many of the young people as possible the advantages of training for this work, so they can come back home and help in solving the problems that are encountered here.

"As to Klamath Falls, this city ought to grow. You have great advantages here with the Upper lake and the timber adjacent. Also, this city is bound to enjoy a great tourist travel from people who will come here and spend their summer vacations. They will establish summer homes on these lakes. You have a beautiful location here for a city. These hills, with the river, give you an opportunity for building a city that will be beautiful."

President Kerr, in addressing the meeting at the high school said in part:

"Education has been variously defined as a preparation for life, the unfolding and upbuilding of life, as life itself. Perhaps the best definition is that by Herbert Spencer. He says that 'to prepare us for complete living is the function which education has to discharge.' Whatever may be the differences of opinion in regard to the details of school work, all must concede that education bears an important relationship to individual and national development. Upon it depends all economic and social growth, the progress of civilization.

"The development of the school system of the United States during the past century is without parallel in the history of education. We spend more money for education per pupil or per capita of population than any other nation in the world. Our school work covers every grade from the kindergarten to the university. The enrollment last year in all the schools, colleges and universities aggregated about nineteen and one-third millions. Of these approximately two hundred and sixty-five thousand were in the colleges and universities and nine hundred and sixty-five thousand were in the secondary schools, while more than seventeen millions were in the elementary schools. Our annual expenditures for education exceeds \$250,000,000.

"In response to the demand for trained experts in the development of the resources and industries of the country, institutions of higher learning have expanded and developed their work during the last few decades until the field now covered is practically as broad as human endeavor. The agricultural and mechanical colleges have developed the science of agriculture, have inaugurated work in household technology, and have been a potent factor in promoting engineering education. During recent years many other colleges and universities have established engineering courses and are now placing emphasis upon technical training.

"Concurrent with the growth of higher education, and largely depen-

dent upon it, has been the development of the civic and economic interests of the country. As a result of the work of the agricultural colleges, great progress has been made in the improvement of agricultural practice. The wasteful, unscientific methods of the past are being replaced by scientific, up-to-date work. We are now able to control the San Jose scale, which at one time threatened the destruction of the entire fruit industry of the country. We have also conquered the codlin moth, the curculio, the currant worm, the pear psylla, and many other pests. By following modern, scientific methods, the value of the agricultural products of the country has been increased hundreds of millions of dollars. The yield of corn in the State of Wisconsin has been increased from twenty-seven to forty-five bushels per acre, thereby increasing the value of this crop in one State alone upwards of \$15,000,000. By the same methods the value of the corn crop of Iowa has been increased \$8,000,000. The increase in the corn crop of the United States amounts to more than two hundred fifty millions of bushels. The formaldehyde treatment for smut saves to the country millions of dollars. By applying scientific principles in cold storage, the State of California alone saves \$500,000 a year on its fruit crop.

"Great progress has also been made in different lines of engineering work. In fact, through the application of science there has been a complete revolution in the methods of transportation, mining and manufacturing. For instance, during the last twenty-five years the cost of mining and transporting certain kinds of ore has been reduced a thousand per cent. Indeed, the industrial development of the United States during the last fifty years, particularly during the last two decades, has been marvelous. The aggregate value of farm products last year was nearly \$8,000,000,000. Fifteen billion dollars is invested in manufacturing, which employ six million people, who receive annually in wages three and one-half billion dollars. The raw material costs \$10,000,000,000, while the manufactured products are valued at \$17,000,000,000.

"But notwithstanding all that has been accomplished in the past, the loss to the farmers of this country through lack of information and the proper application of scientific principles in agricultural practice amounts literally to hundreds of millions of dollars a year. It is estimated that the annual loss on cereals from insects alone is \$100,000,000; on forests and lumber, \$150,000,000; on stored crops, \$150,000,000; on animal products, \$175,000,000; on fruits, \$27,000,000; on cotton, \$50,000,000; on hay and grain, \$53,000,000; and on other products about \$735,000,000. Last year the dairy products of the country aggregated in value more than \$800,000,000, and

yet it was estimated that one-fourth of the cows did not pay for their feed, and that another fourth yielded no profit. The average yield of wheat in the United States for 1907 was fourteen bushels per acre. In that year 45,211,000 acres were required to produce 634,000,000 bushels.

"A century ago the yield of wheat in Great Britain was about the same as the present yield in the United States, but after a campaign during the past hundred years of scientific methods of cultivation and seed selection, the fields of England that have been tilled for more than ten centuries are now yielding thirty-two bushels per acre. Germany has been an agricultural country for nearly two thousand years, yet the lands produce more than 27 bushels of wheat per acre. If the United States produced twenty-eight bushels per acre it would double the present product on the same acreage. This would add upwards of 600,000,000 bushels of wheat to last year's crop on the same land, and at only a nominal additional cost. Again, by thorough tillage, the average yield of wheat in the Netherlands is more than thirty-four bushels per acre against fourteen bushels in the United States; of oats, fifty-three bushels against twenty-three in the United States; potatoes, 232 bushels against 95 in the United States (a difference of over \$60 an acre). Not only this, but the average yield of wheat on the best lands of the Northwest has fallen from twenty-five to less than twelve bushels per acre.

"These facts are given as an indi-

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