

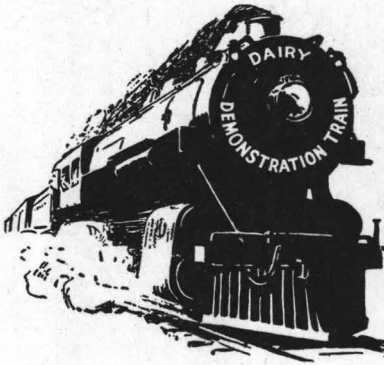
6-356

Oregon State Agricultural College Extension Service

PAUL V. MARIS, DIRECTOR
CORVALLIS, OREGON

Dairy Demonstration Train

Featuring Lower Costs, Higher Quality, Better
Marketing and Increased Consumption



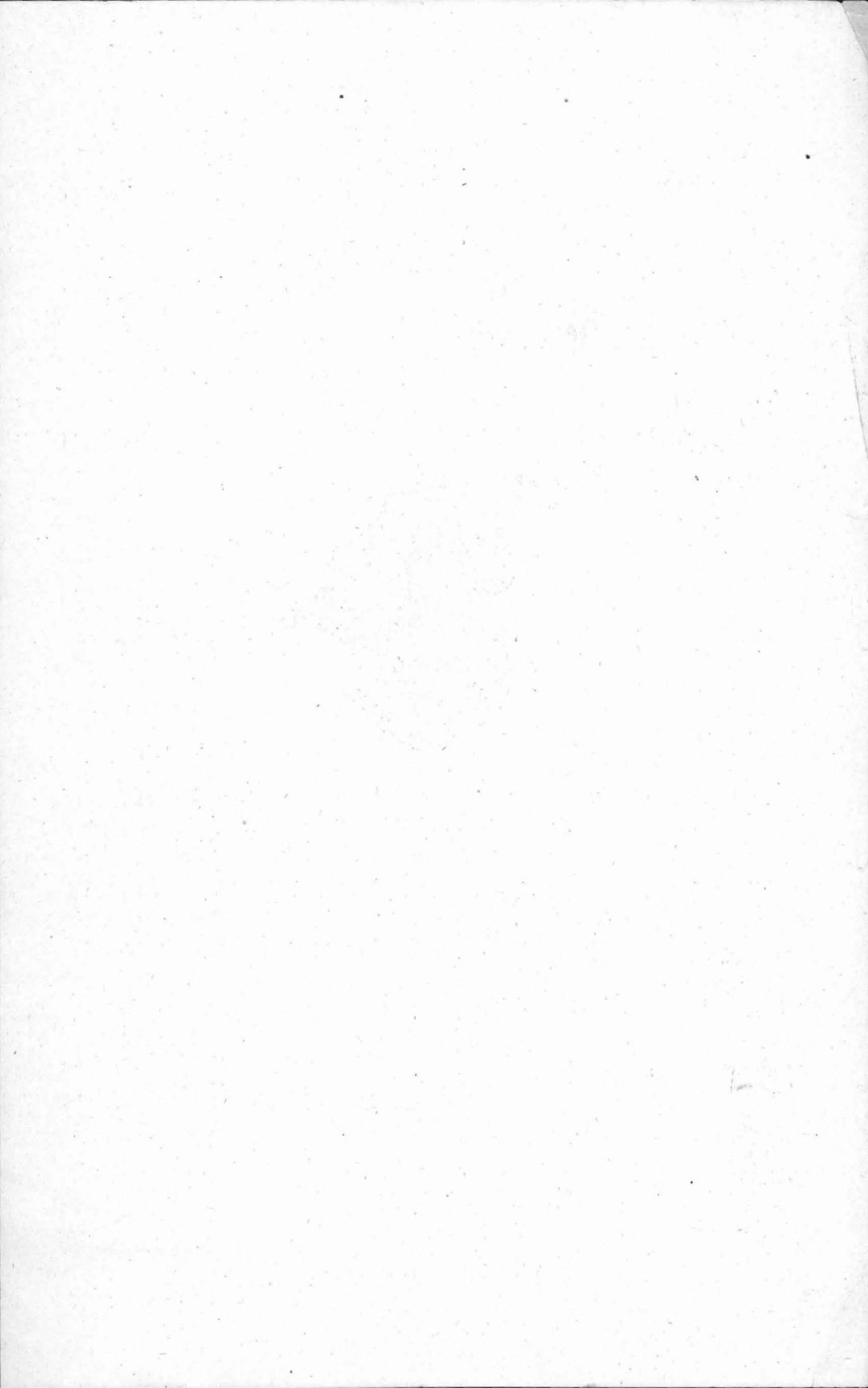
Summary of Program and Exhibits by the Extension Service of
Oregon State Agricultural College

PORTLAND

TRAIN OPERATED BY SPOKANE AND SEATTLE
RAILWAY SYSTEM

"Economy and Quality for Profit"




Cooperative Extension Work in Agriculture and Home Economics
Oregon State Agricultural College and United States Department of Agriculture, Cooperating
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FOREWORD

The farm value of the dairy products of the United States exceeds the combined farm value of cotton, wheat and potatoes, while the output of the milk-processing manufactures exceeds in value the output of either the automobile or the steel business, generally regarded as our leading industries. In Oregon dairying has made an enviable record of progress. The average production of dairy cows in the state has for many years been far above the national average, and continues to increase, from year to year, much more rapidly than the national average. The percentage of cows in herd improvement associations, as shown elsewhere in this bulletin, is near the top among all the states of the Union. Eradication of diseases, notably tuberculosis and contagious abortion, has progressed further in Oregon than in other states. Aggregate records of production, moreover, especially in the Jersey breed, give Oregon an envied preeminence. Already an industry with products aggregating twenty-five million dollars a year—market milk and cream, butter, cheese, condensed and powdered milk, ice cream and cottage cheese—dairy production and dairy manufacturing in Oregon are still capable of further development and expansion. This development will probably depend upon two fundamental principles: first, lower cost of production of the raw product, and second, the manufacture of products of higher quality. This demonstration train is part of a constructive campaign to promote sound development by practical and proved methods. This bulletin is designed to summarize briefly some of the essential principles taught in the lectures, exhibits and demonstrations of the itinerant program.

GOOD MANAGEMENT makes dairying profitable, just as good management is required in any business to make it profitable. Management is complex. There is a personal element in it; but there are fundamental principles which, as a group, no personal genius can overcome. Low-priced raw material, an efficient factory, and wide, persistent and clever advertising are some of these fundamentals. In dairying the raw product is feed. The lowest possible cost is the aim. The cow and the creamery are the manufacturing plant. Healthy cows of known high producing ancestry are fundamental. Factories complete the manufacturing process. Quality product meets sharp demand, but even when efficiently produced and manufactured, there is still another step. Food-products advertising has made tremendous advances. New processing has placed innumerable attractively prepared foods in competition for consumers' attention. Dairy products must not fall by the wayside in this intensive struggle on the markets. In the succeeding exhibits in this train, these points are all elaborated. If in doubt, ask the demonstrator.




THIS TRAIN WILL TELL WHAT MAKES DAIRYING PROFITABLE?		
CHEAP FEED PASTURES	GOOD COWS FREE FROM DISEASE	GOOD MARKETS OBTAINED BY MAKING QUALITY GOODS
		
LEGUMES, ALFALFA CLOVER, VETCH	PRODUCING 300 LBS. OF FAT OR MORE	AND ADVERTISING

PASTURE CROPS harvested by good cows may be as profitable as any other crops that can be produced, even from the best land. Time was when the pasture was by common consent the rough land. Now more dairymen every year find the best land none too good for well-selected pasture crops. In the Willamette Valley, where the pasture season is short, there is an undeveloped resource in the waters of the many small rivers and creeks, which by gravity or pumping make it possible to grow Ladino clover, that heavy yielding pasture crop, on thousands of additional acres. Ladino clover is a giant white clover. It grows where ordinary white clover does well, but it needs more water. It does well in the Coast counties without irrigation. It carries more cows per acre than any other pasture under irrigation in Central Oregon. You can't beat it under irrigation in the Willamette Valley. For the overflow lands along the Coast, canary grass holds high place. Take some good land, sow it to a well-adapted pasture crop, and then let the cows do the haying.

PASTURES PAY PASTURE EVERYDAY BRINGS DOLLARS YOUR WAY		
IRRIGATED LADINO IN WILLAMETTE VALLEY	LADINO AND CANARY PASTURE ON COAST.	IRRIGATED LADINO FOR CENTRAL OREGON
		
PAID 20% ON 1200 LBS. CARRIED 3 COWS PER ACRE	ARE CROPS DAIRYMEN CAN BANK ON.	CARRIES 4 COWS PER ACRE 8 MONTHS

LEGUMES. Distillate is a satisfactory motor fuel for certain types of motors, but one does not use distillate for the refined high-speed motors of modern automobiles. Timothy hay, Red top, and even cheat have their purposes, but for the refined requirements of the dairy cow one looks further. Legumes are essential for profit in feeding dairy cows. For real success in dairying the farmer grows legumes or buys them. There are two reasons—the first is that legume hay is the hay that makes milk, the second is that legume hay yields more tons per acre than other hays. Every Willamette Valley county can grow some thousands of acres of alfalfa. On adapted soils, it makes the highest yields and is the best hay possible. Not all soils will grow alfalfa. Where soils are not suited, one can substitute the vetches or include clover in a rotation. Clover, clover, row crops and small grain is a satisfactory rotation, by years. On the Coast lime may be required to get the vetches started, but even so it pays. Alfalfa, vetches, clover and peas make the kind of hay that makes cows pay.

**LEGUMES ARE NECESSARY
LEGUME HAY IN EVERY WAY MAKES
DAIRYING BETTER & BETTER**

WILLAMETTE VALLEY	COAST & COLUMBIA	CENTRAL OREGON
		
WITH ALFALFA YOU CAN CARRY 40% TO 50% MORE COWS	VETCHES, PEAS, CLOVER & ALFALFA— A LEGUME FOR EVERY CONDITION	NORTHERN CROWN SEED OR RHM IS BEST. APPLY SULPHUR.

PASTURE in summer, legume hay in winter, but that's not all. Dairy cows require succulent feed in the ration. A silo, for instance, is a pasture under cover. A root cellar is practically the same thing, and then in Western Oregon there is kale. Corn silage takes no second place, if satisfactory yields can be obtained; otherwise try oats and vetch in the silo, or kale fed daily from the field. In the Coast region roots are most economical, because of the heavy yields. Among the roots none exceed the Danish Bortfeldt in yield or quality. In Central Oregon roots or cull potatoes, the latter available in quantities, fill the bill. Only one half the tonnage of succulent crops required to give the dairy cows their normal requirements is grown in the Willamette Valley, reports show. Pasture in the summer and then a pasture under cover for the winter, with a barn full of legume hay, is a combination that needs only some good cows to put the dairy farm across.

**SUCCULENTS ARE NEEDED
A BOVINE SMILE IN WINTER TIME
IS WORTH YOUR WHILE IN ANY CLIME
SILAGE, KALE, AND ROOTS MAKE WINTER SMILES**




WILLAMETTE VALLEY	COAST AND COLUMBIA	CENTRAL OREGON
CORN SILAGE, IF YIELD IS 10 TONS PER ACRE, OATS AND VETCH OR KALE.	ROOTS GIVE BEST RESULTS. THE DANISH BORTFELDT HAS SUPERIOR QUALITIES AND MAKES HIGHEST YIELDS.	CULL SPUDS ARE REAL DAIRY FEED, EQUAL TO SILAGE, MANGELS OR CARROTS ARE GOOD.

DO BIG BUSINESS. This is the day of big business. The consolidation of business firms continues at a rapid pace. Because this movement advances, it provides proof that in big business there is certain economy which permits of lower production costs and a higher profit. As with business in general, so it is with the business of dairying. The larger the herd, efficient management considered, the greater the opportunity to make a satisfactory living and labor income.

It is the aim of farm people everywhere to establish a home which has material equipment, conveniences, and comfort, and the operation of which will permit on the part of those in that home self-confidence, self-respect, and a sense of social equality. On the dairy farm a small herd will not provide a sufficient income to enable this condition in the home.

Records of Oregon cow-testing associations show that in order to provide a satisfactory income and a reasonable standard of living there must be at least 22 cows in the dairy herd with an average production of 250 to 300 pounds of butterfat annually. On the diversified farm there should be no fewer than 10 cows, this number being required to pay overhead costs and satisfactory returns. Very little more chore time is required for the 10 cows than for five or six, and the labor return is almost double.

DO BIG BUSINESS!
A GOOD INCOME IS A JOY FOREVER
IS YOUR HERD LARGE ENOUGH TO MAKE YOU A LIVING?



<small>SMALL HERDS LIKE THIS - 5 OR 6 COWS</small> 	<small>HERDS LIKE THIS - 25 OR 30 COWS</small> 	<small>ON DIVERSIFIED FARMS HAVE NO</small> 
<small>ARE ONLY DRUDGERY - LABOR RETURN PER HOUR OF 20¢ OR LESS.</small>	<small>HAVE A CHANCE OF SUCCESS - LABOR RETURN OF 40¢ PER HOUR OR MORE.</small>	<small>FEWER THAN 10 COWS TO PAY OVERHEAD COSTS AND A PROFIT.</small>

IMPROVED QUALITY OF COWS. The cow-testing association is a vehicle which has been used by every important dairy district in the world in expediting progress. Regular testing, accompanied by feed cost records, eliminates guessing and enables the placing of the dairy enterprise on a strictly business basis.

Testing enables the dairyman to know whether he is an inn-keeper for star boarders or the successful thrifty inn-keeper for boarders that pay. More and more Oregon dairymen each year are coming to the view that it is about as reasonable to conduct a dairy enterprise without records as it would be to conduct a credit merchandising business without books. There were more cows in regularly organized dairy-herd improvement associations last year than ever before in the history of the state.

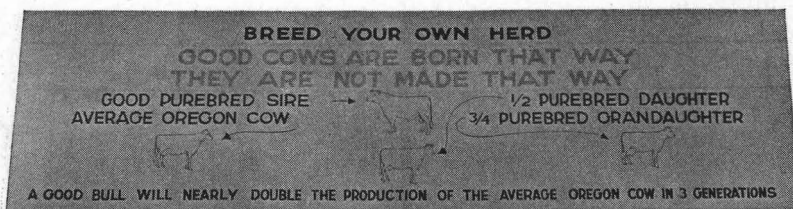
But perhaps, after all, the greatest value to be obtained from cow-test work is not in the discovery of the unprofitable cow or in the feeding of a balanced ration, but in that awakening of the spark of desire and determination in the dairyman, the man who loves his cows, to be a better dairyman.

IMPROVE QUALITY OF COWS
ARE YOU AN INNKEEPER FOR STAR BOARDERS?
TESTING HELPS YOU KNOW YOUR COWS
THESE 10 COWS ARE AS PROFITABLE AS 80 LIKE THESE

	<small>PRODUCED 434 LBS. FAT EACH RETURNED 100% ABOVE FEED COST.</small> <small>PRODUCED 178 LBS. FAT EACH RETURNED 112% ABOVE COST.</small>	
CULL YOUR HERD AND USE THE BEST SIRE POSSIBLE.		

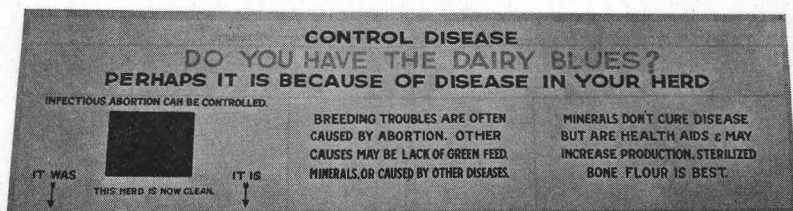
BREED YOUR OWN HERD. A good bull will nearly double the production of the average Oregon cow in three generations. It is this fact that points the way by which every Oregon dairyman can improve the quality of his business by increasing the production efficiency of the cows in his herd. There can be cleanliness, cheap feed and pasture, healthy cows and efficient marketing, yet the dairy enterprise may be unprofitable because poor quality cattle fail to manufacture hay, grain and succulence economically into milk. It is these cows that are unprofitable manufacturing plants that should be weeded out and sent on their way to the butcher, and the remainder of the herd improved by the use of a good pure-bred sire. Many Oregon dairymen are breeding their own herds, increasing the efficiency of their cows and reducing the cost of producing butterfat.

In this manner one Oregon 100-cow herd led the cow-testing association in which it had membership with an average production of 387.55 pounds of butter fat and 7,682 pounds of milk. All the feed for this herd with the exception of a little grain came from a 150-acre farm. Here again the large herd is an advantage because the carrying cost of a good herd sire is less per cow.



CONTROL DISEASE. Cows, like people, must be healthy in order to carry on their work efficiently. The infectious abortion disease, the most serious disease which menaces the dairy industry, can be controlled. This has been proved by careful experiments at the Oregon Experiment Station and demonstrated on practical dairy farms throughout the state.

The abortion control associations and the establishment of abortion control areas as provided by regulations set up by the state livestock sanitary board, are the means through which this end can be most economically attained. County agents throughout Oregon last year were instrumental in the organization of these abortion-control associations and control areas. Dairy authorities everywhere recognize Oregon as far in the lead of other states in the control of this disease. If your herd is one of the unhealthy ones, start now in a systematic cleanup campaign through the abortion control association or by having your farm included in a control area. Talk with your county agent about it.



SANITATION IS A STEP IN MARKETING. "An apple a day keeps the doctor away," so goes an old saying. If there is truth in this, there is far more truth in saying that a clean barn every day will help keep odors away. Milk is readily tainted because it absorbs odors in its flavor. A clean barn will go a long way towards preventing that "cowy" taste in milk, gassy cheese, and off-odors in butter.

Sanitation is an important first step in marketing, and unless the buildings are clean and the equipment in which the milk is handled is clean, it is not possible to market a product which will bring the highest price.

Important factors in this cleanliness program are: first, a light airy barn that receives an occasional application of whitewash; and second, systematic care not to feed dusty hay, silage or other strong-smelling feeds just before milking.

Let your nose direct you in this program. Your nose knows cleanliness.

SANITATION IS A STEP IN MARKETING
THE WORLD'S NOSE KNOWS CLEANLINESS

■ ■ ■

CLEAN BUILDINGS & EQUIPMENT WILL HELP SALES.

HOT WATER NOT EXPENSIVE. Someone has said "that cleanliness is an essential to success." This is not an over-statement so far as dairying is concerned; for it is in cleanliness that we find an important factor determining, to a large degree, the price and favor which dairy products meet in the hands of the consumer.

Hot water and sterilizing equipment in the milk house conveniently located can be provided at small cost. It is only by this means that clean utensils can be assured, and clean utensils are essential to the production of sanitary milk and cream.

Next to direct sunlight, there is no cheaper or more effective germ destroyer for the milk house than boiling hot water. It is necessary to the making of quality dairy products. It is an investment that pays a return.

Whether you make your own hot water and sterilizing equipment or buy an outfit manufactured and complete for operation, is not the important point. The important thing is that you have facilities for conveniently heating water and sterilizing equipment.

HOT WATER IS NOT EXPENSIVE !
GERMS STEWED OR BAKED - BUT NOT RAW
HEATING AND STERILIZING EQUIPMENT WILL MAKE QUALITY PRODUCTS AND SAVE YOUR MONEY.

HOT WATER IN THE MILK HOUSE SAVES TEMPER AND STEPS. **HOT WATER AND SUNSHINE ARE THE BEST MILK HOUSE GERM DESTROYERS.** **CLEAN UTENSILS PAY - YOU CANNOT PRODUCE SANITARY MILK WITHOUT THEM.**

COOLING IS NECESSARY. As essential as cooling is to molten metal for rigid form, so is cooling essential to production of milk and cream of highest quality.

A can of milk or cream setting in water cools seven times faster than if setting in air of the same temperature. This fact makes it exceedingly simple to provide cooling equipment on every dairy farm. Either a wooden tub or a small concrete tank supplied with running water, which will reduce the temperature to at least 50 degrees Fahrenheit will gain the desired end. This rapid cooling greatly improves the keeping quality of the milk and slows up bacterial development.

Quick cooling of your milk and cream will mean extra dollars to you because it results in better milk, butter and cheese, and because the resultant superior flavor tends to increase consumption. Most dairy products manufacturing concerns now pay on a quality basis, and cooling will help you greatly in improving quality, thus bringing a higher return.

It will pay you to cool quickly with running water.

**COOLING IS NECESSARY AND PAYS!
MEANS EXTRA DOLLARS
IT MAKES BETTER BUTTER AND INCREASES CONSUMPTION**




QUICK COOLING MAKES PRODUCTS KEEP LONGER	SETTLING IN WATER COOLS 7 TIMES FASTER THAN SETTLING IN AIR OF SAME TEMPERATURE	MOST PLANTS NOW PAY ON A QUALITY BASIS. COOLING CAN MAKE YOU MORE MONEY
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IT IS CHEAPER TO BE CLEAN. The use of hot water and sterilizing equipment, a clean barn and milk house, and quick water cooling of milk and cream are three important steps up this ladder of cleanliness. They are important steps because they insure the best market price. They are not steps that are arduous or expensive to take, for they can be attained by all dairymen at reasonable cost. The investment once made, moreover, will bring a good return.

By these means the bacteria count of milk is reduced, the yeast and molds found in butter will be fewer and the quality higher. There will be good cheese, for good cheese can be made from clean milk, and from clean milk only. Make the consumer think of healthy cows, green pastures and blossoming clover fields by giving him sweet clean milk and butter, and high quality cheese made from pure milk.

Cheap feed, high-producing cows, and efficient management are all important factors in successful dairying, but this is not all. The best market price can come only through clean barns, clean equipment, and quick cooling of milk and cream.

**IT'S CHEAPER TO BE CLEAN
PRODUCE EFFICIENTLY THEN INSURE THE
BEST MARKET PRICE BY SANITARY HANDLING**


THIS IS HOW BACTERIA ARE COUNTED.  Grade B Milk Grade C Milk	YEASTS AND MOLDS IN BUTTER ARE A MEASURE OF QUALITY IN CREAM.  Yeasts and Molds in Fancy Butter Score? Yeasts and Molds in Standard Butter	GOOD CHEESE IS MADE FROM PURE MILK.  Clean Milk for Cheese Dirty Milk for Cheese
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FOOD VALUES. If producing milk is our business, it should also be our business to tell the world continually the fact that no food is a good substitute for dairy products. The dairy farmer milking a dozen cows cannot increase consumption much perhaps by his individual story. But when he and all the neighbor dairymen, in fact all the dairymen in his county, get together they can tell a story that's worth telling. It is now being told in several Oregon counties. In Clackamas county, for instance, and in Coos county also, dairymen have through various organizations united to stimulate consumption of dairy products in those counties and the results have been very substantial. If all counties of the state were to follow the same plan, there would be a marked increase in use of dairy products. Your county agent has outlines of the campaigns of Clackamas and Coos counties and would be glad to work with you. People, in the mass, forget quickly. Milk becomes commonplace. That a quart of milk contains as much lime for instance as 96 biscuits, 2 $\frac{3}{4}$ pounds of eggs, or 72 small potatoes, must be reviewed from time to time. It is helpful also to recall that milk contains the materials that children need for growth, that both young and old need for repair of body machinery, that regulate body functions, protect against disease, and provide heat and energy necessary for work.

**THE FOOD VALUE OF DAIRY PRODUCTS MUST BE TOLD
IF DAIRYING IS YOUR BUSINESS**


ARE YOU MAKING IT A PART OF YOUR BUSINESS TO GET MORE OF YOUR PRODUCTS USED?

DO YOU KNOW




BUTTER

HAVE YOU HEARD



DO YOU BELIEVE



MILK
makes a difference

HAVE YOU TOLD ANYONE "THERE IS NO SUBSTITUTE FOR GOOD BUTTER?"


QUALITY DETERMINES PRICE. You get what you pay for when you are buying butter. Low grade butter, made from old, sour, off-flavored cream sells for less than high grade butter made from sweet, clean cream.

The Bureau of Agricultural Economics of the United States Department of Agriculture maintains a branch at Portland operated for two purposes: (1) To obtain and disseminate market information. (2) To grade butter and cheese and place an official score on it.

The Federal Grader will inspect butter made in Oregon creameries when this is sent to the Portland market. He will place an official score on the butter and it will be sold in accordance with this score. The creameries selling print butter scoring at least 92 under the federal inspection service may enclose a certificate of quality with the packages. This serves as a guarantee to the consumer that the butter is of high quality. This arrangement is an advantage to the dairy industry because it places its products on a graded basis, the same as many other farm products offered for sale.


**GRADES AND STANDARDS PROTECT MARKETS
IS IT NONE OF YOUR BUSINESS
WHO GRADES OR INSPECTS YOUR PRODUCT,
OR WHETHER IT IS GRADED AT ALL?**

FEDERAL STATE GRADE & INSPECTION
CERTIFICATES HELP TO SELL YOUR PRODUCTS



GRADES & STANDARDS
ALSO PROTECT YOUR
CUSTOMERS & ESTABLISH
CONFIDENCE IN YOUR BRANDS

FEDERAL INSPECTION CERTIFICATES AS PROOF OF
HIGH QUALITY ARE NOW USED BY MANY CREAMERIES



ADVERTISE. Canned pineapple in ten years jumped from a product almost unknown to the point where it totaled one-fourth of all the canned fruit purchased in a recent year. Advertising did it. Magazines of national circulation carried attractive pictures of pineapples growing in the Hawaiian Islands, pictures of canned pineapple served from the can, pictures of canned pineapple in numerous attractive dishes. Sauer kraut, speaking from the standpoint of people in the mass, is not a particularly attractive food but the consumption of sauer kraut has increased one hundred percent in each of the past several years because of advertising. Breakfast foods that were never heard of a dozen years ago are common household supplies. Advertising did all these things and many others. Do we see milk advertised? Not very much. Do we see cheese advertised? Not very much. Butter? Even less. The food habits of people are changing. Advertising is changing them. There is keen competition among producers and distributors of food for a place on the family table. If pineapple gets that place, it is a pretty fair guess that apples do not. A long list of competitive foods could be named. Those that are best advertised are getting a place on the table. Dairy products are not gaining in proportion to many others of less nutritive value. Perhaps milk, butter and cheese seem a little commonplace to advertise, but wouldn't a picture of a brick of ice-cream or a wedge of apple pie with a fine piece of cheese, for instance, all properly colored, make just as appetizing a picture as a dish of Hawaiian pineapple? And the apple in the pie is your neighbor's product, even though you prefer milking cows to spraying fruit. Commercial advertising of first-class dairy products pays. It is paying in Tillamook county.

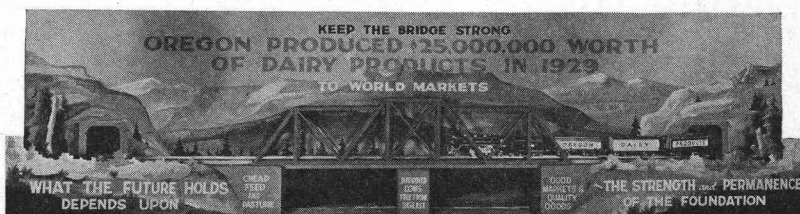
ADVERTISING AN ESSENTIAL PART OF MARKETING
IF YOU CAN'T LIVE WITHOUT DAIRY PRODUCTS,
- TELL THE WORLD, IF YOU CAN, WHY DAIRY?

 What would a breakfast of Hot Cakes be like without butter?	 Think of the calamity of Macaroni and Cheese without Cheese	 Can we do without Milk Drinks? <i>The Kid's glass of milk</i>
 What's Apple Pie Without Cheese?	 <i>Other drinks you like -</i> Milkshakes, Malted Milk, Buttermilk - <i>Who Sell Ice Cream?</i>	

EVERY DAY NECESSITIES BUT ARE YOU INSISTING THAT THEY BE ADVERTISED?

FUTURE DEVELOPMENT. Oregon has a strong foundation for its dairy industry. On this foundation there can be expansion. A factor as important in the expansion program as any other is that of cheap feed, including pastures. Development of alfalfa acreages in the Willamette Valley to the ultimate possibility and utilization of the water resources of the small creeks and streams of the Willamette Valley for irrigated summer pastures are two requirements in building the bridge to carry a heavier load. In the Coast counties and Lower Columbia, vetches, wherever they may be grown, cut costs. When conditions in this state are compared with those in other states, it is plainly seen that Oregon farmers are near the front row in improvement practices. Continued progress will keep the bridge strong. In cow-testing associations Oregon takes a leading place in the entire country for number of dairy cows on test. In control of disease an even better position has been attained. Tuberculosis has been reduced to such an extent that it is almost negligible in most counties. In testing for abortion disease Oregon farmers are also near first place. Abortion-control areas definitely organized are in operation in several Oregon counties including Malheur, Douglas, Umatilla, and Crook. Development of the feed resources of the state, with continued and increased

attention to testing for butterfat and to control of disease, will make the bridge stronger. The market is available. A growing population in California presents a market that according to all indications should continue to expand for years. The production advantages of Oregon can maintain a very favorable position for her dairymen on this market if the dairymen use principles of good business and applied science in their dairy enterprises.



THE DEMONSTRATION TRAIN HERD. The dairy cow is the manufacturing unit on the dairy farm. It takes the same amount of feed to keep her alive when she is dry as when she is producing two or ten gallons of milk a day. The earning capacity of the cow depends upon the amount of milk she will produce above that required to pay for her maintenance.

One of the most important factors in determining the cost of production is the ability of the cow to produce milk. Good cows produce milk at a low cost, poor cows produce milk at a high cost. The ability of the cow to produce is determined by two things. The first of these is whether or not she has the inherited capacity for production, and the second is the amount and kind of feed that she receives.

The flat car demonstration of the livestock carried on the train illustrates the importance of good breeding and its effect upon the cost of producing milk and butterfat. Six cows are on the train, three of these are daughters of the other three. These daughters are sired by the same bull. The average production of the daughters is 3707 pounds milk, and 72.7 pounds butterfat more than their dams. The average feed cost for the dams was \$95.75, for the daughters \$91.81.

The average return above the cost of feed for the dams was \$77.02, for the daughters \$115.62, a difference of \$38.60 when based upon butterfat at 48¢ per pound, which was the prevailing price last year. The difference is even more significant when fluid milk at the prevailing Portland price is considered. In that case the daughters returned \$77.40 more than their dams, and the dams returned \$115.44 above the cost of feed.

These differences put in another way represent a cheaper feed cost of 5.4¢ per pound of fat and 30¢ for a hundred pounds of milk. The cost of production was lower because the manufacturing unit was more efficient.

Looking at it another way, a bull capable of increasing production, as was the sire of these three daughters, will more than pay for himself, even if he is a high-priced bull, in one crop of calves. The increased net return of ten daughters on butterfat alone would be \$386.00 a year, and if based upon milk would be \$774.00 a year. The whole demonstration illustrates the importance of better breeding, based upon producing ability.

A proven sire, who has shown material increase in production in his daughters over his dams, is also demonstrated on the flat car. Not everyone can find a proven sire. The next best thing is to buy the son of a proven sire; consequently, two younger sires are shown and the reason explained for their selection.

LIST OF AVAILABLE BULLETINS FOR DAIRYMEN

Oregon State Agricultural College
Corvallis, Oregon.

CROPS FOR THE DAIRY FARM

- Ex. 319. Corn.
- Ex. 323. Green Feed or Soiling Crops for Western Oregon.
- Ex. 414. Rape.
- Sta. 248. Cost and Efficiency in Producing Hay in the Willamette Valley.
- Sta. 251. Cost of Producing Silage and Kale in the Willamette Valley.
- Sta. 213. Common Vetch.
- Sta. 241. Cost and Efficiency in Producing Alfalfa Hay in Oregon.
- Sta. 246. Alfalfa in Western Oregon.
- Sta. Cir. 46. Hungarian Vetch.
- Sta. Cir. 80. Japanese Barnyard Millet.

FEEDING OF DAIRY CATTLE

- Ex. 402. Dairy Cattle Feeding with Some Pointers on Management.
- F. B. 743. The Feeding of Dairy Cows.
- F. B. 578. The Making and Feeding of Silage.
- F. B. 1336. Feeding and Management of Dairy Calves and Young Dairy Stock.
- Sta. Cir. 25. Raising Calves on Calf Meal.

DAIRY MANAGEMENT

- Ex. 413. A Dairy Program for Oregon.
- Farm Income Series No. 1. Dairy Farm Incomes Required to Maintain Standard Farm Homes in Oregon.
- F. B. 1470. Care and Management of Dairy Cows.
- F. B. 949. Dehorning and Castrating Cattle.
- F. B. 1412. Care and Management of Dairy Bulls.
- Sta. 250. Cost of Horse Labor on Oregon Farms.
- U. S. Leaflet 14-L. Raising Dairy Heifers.
- U. S. Leaflet 10-L. Care of Dairy Cows at Calving Time.

PRODUCTION OF CLEAN PRODUCTS

- F. B. 1214. Farm Dairy Houses.
- F. B. 976. Cooling Milk and Cream on the Farm.
- F. B. 1359. Milk and Its Uses in the Home.
- F. B. 602. Production of Clean Milk.
- F. B. 1473. Washing and Sterilizing Farm Milk Utensils.
- F. B. 1315. Cleaning Milk Machines.

DAIRY MANUFACTURERS

- F. B. 1451. Making and Using Cottage Cheese in the Home.
- F. B. 1191. Making American Cheese on the Farm.
- F. B. 876. Making Butter on the Farm.
- F. B. 960. Neufchatel and Cream Cheese—Farm Manufacture and Use.

MARKETING DAIRY PRODUCTS

- Ex. 406. Factors in the Organization of Cooperative Associations.
- F. B. 42. Points to Consider in Establishing a Cheese Factory.
- Sta. 258. The Butter Industry of Oregon.
- Sta. 168. Survey of Typical Oregon Farmers' Creameries.
- Sta. Cir. 74. A Survey of Marketing Problems Confronting Oregon Creameries.

DAIRY CATTLE DISEASE CONTROL

- Sta. 232. The Eradication of Infectious Abortion from the Dairy Herd of Oregon State Agricultural College.
- F. B. 1422. Udder Diseases of Dairy Cattle.
- U. S. Leaflet 10-L. Care of Dairy Cows at Calving Time.

MISCELLANEOUS

- Ex. 324. Questions and Answers to Aid Operators of the Babcock Test to Meet the Requirements of the Oregon Law.
- F. B. 893. Breeds of Dairy Cattle.
- Sta. 255. Electric Hay Hoists.
- F. B. 99. Judging Dairy Cattle.

. A letter or past card addressed to the Extension Service, Oregon State Agricultural College, indicating by number or name the publications desired, will bring them to you by mail.

