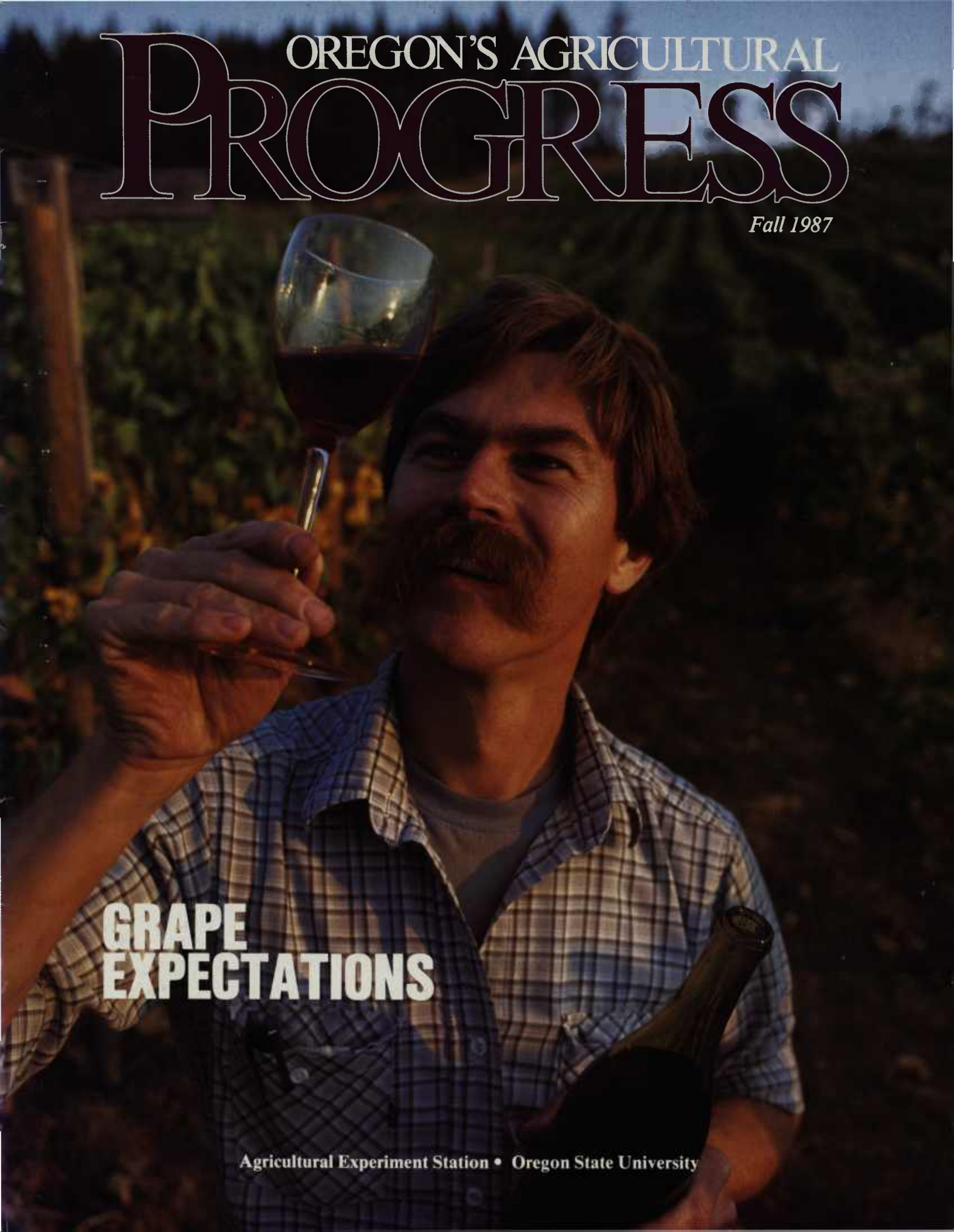

OREGON'S AGRICULTURAL PROGRESS

Fall 1987

GRAPE EXPECTATIONS

Agricultural Experiment Station • Oregon State University

THE EDITOR'S NOTE

Food scientists haven't taken over the world—just the Agricultural Experiment Station and the College of Agricultural Sciences.

As many of you probably know, OSU has a new agriculture dean, Roy Arnold, and a new Experiment Station director, Thayne Dutson. I asked them about the significance of both having been in the same field before becoming administrators.

"People have joked that we're going to change the college's name to the College of Food Science," said Arnold, chuckling. "But really, it's just a coincidence. Thayne and I didn't even know each other, except by reputation (before coming to OSU). The truth of the matter is that I've been away from food science so long they probably wouldn't claim me unless I did a lot of refresher training."

Arnold earned his doctorate in food science at OSU in the 1960s. He came to Oregon State from the University of Nebraska, where he was vice chancellor of the Institute of Agriculture and Natural Resources. Dutson came from Michigan State University, where he was chair of the Department of Food Science and Human Nutrition.

As you'd expect, the new Station director and the new dean who hired him agree on a lot of matters. One that seems especially evident is the need for agricultural research that's "market driven," as Arnold puts it.

"So far I've avoided listing an agenda and tried to concentrate on listening and learning," he said. "But obviously, economic development is on a lot of people's minds. And certainly OSU has a role to play in providing research and Extension delivery programs that will help the state take advantage of different agricultural opportunities."

DAVE KING

Thayne Dutson, left, director of the Agricultural Experiment Station, and Roy Arnold, dean of the College of Agricultural Sciences.

"The one driving goal I have," said Dutson, "is to design a research system that will help our farmers, ranchers and agribusinesses increase the competitiveness of Oregon agriculture and foods systems.

"A lot of people think market-oriented research is very short-termed," he said. "But many times this will involve long-range projections for very basic research. It may be a new market for an existing product, or a new commodity for an existing market. Of course, there also has to be some applied research to allow the application of the basic research. Basic research, applied research and Extension programs are all a part of the Land Grant university system.

"One thing that's going to be extremely important in setting the research agenda is input from those with the knowledge—the faculty, branch station superintendents, department heads, industry, state government. You have to get your information from people with their fingers on the pulse. Part of it is setting up a system that allows that information to flow in a timely fashion. Another is establishing trust, good communication."

The dean and the director say they been getting "good vibes" from the agriculture industry in their travels around the state.

"I'm already hearing from industry people on what they think we should be doing," said Dutson. "That's fine. I welcome that kind of interaction."

Andy Duncan

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Cover: OSU Wine researcher Barney Watson stands among Pinot Noir grapes at the Woodhall III Vineyard near Alpine, Oregon. See story, page 10. (photo by Dave King).

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WIND IN THE CORN

Ordinarily, wind testing seems more suited to the needs of an aerodynamic engineer than a vegetable crop scientist. But Harry Mack has found it to be the ultimate test in his work on evaluating the ability of corn stalks to stand up to fall rainstorms.

Earlier this fall, Mack did some wind testing with a helicopter, creating quite a blow over the project's corn test plot at the OSU vegetable crops research farm on the outskirts of Corvallis. While the helicopter provided the turbulence, he simulated the rain of a storm by watering the test plot thoroughly just before the helicopter arrived.

"The test was a bit more severe than I thought it would be," said Mack. "The amount of wind generated was greater than an average storm would generate, but we are encouraged by the results."

The purpose of the ongoing research is to compare how well topped corn, and chemically treated corn, withstand windy, wet fall weather. The project was prompted by a problem called lodging that corn growers in Oregon's Willamette Valley have had for years.

"Lodging is the term we use to describe fallen cornstalks in the field," said Mack. "When fall storms hit, blowing corn plants over, the number of plants down is the amount of lodging the wind has caused in that particular field."

Such downed corn is difficult, if not impossible, to harvest mechanically. To prevent lodging, growers have mechanically cut the tops off corn for the past several years.

"The topping is done to reduce the plant's resistance to the wind, which in turn reduces lodging," Mack explained.

The drawback is that topping reduces corn yields. That started OSU researchers evaluating an alternative—chemically treating corn plants to make them shorter.

Mack is evaluating a chemical product called Ethephon. It contains ethylene, a ripening hormone that keeps plants short. The product also tends to enhance the root structure of a corn plant.

"The product sounds promising for further testing," Mack said. "There are still questions about how it will effect yields, and the timing and cost of application."

Though the helicopter wind test was somewhat unrealistic in that Mother Nature wasn't involved, Mack calls it a success.

"The untreated corn went down the worst, the mechanically topped corn less so, and the chemically treated corn, in some cases, the least of all," he said. "On a comparative basis, the chemical treatments look good."

BOB ROST

This helicopter helped an OSU horticulturist study ways of protecting corn from storm damage.

DEMOCRATGRASS, BEAVER-POISON

A fern's a fern, right?

Not according to a booklet published by the Agricultural Experiment Station. It lists 62 names for the ferns that grow in the Pacific Northwest.

Called the "Northwest Common-Name Check List of Plants," the booklet gives plants' scentific and common names.

For example, look acros the page from Digitaria sanguinalis. You find tha it's hairy crabgrass.

Look up California black, canyon live, huckleberry, olracle, Oregon white and Sadler. You find the scientific names for the oak tree varieties that grow in the Northwest.

Democratgrass, beaverpoison and Indian-tobacco, in a historical section, are old-time names for red fescue, waterhemlock and buckwheat.

The purpose of the publication is to help scientists communicate with farmers, ranchers, land managers and others, say authors William Anderson, a retired U.S. Soil Conservation Service range conservationist, and Thomas Bedell, an OSU Extension Service range specialist.

A limited number of copies are available at no charge. Person's wanting a copy of the booklet can contact Bedell through OSU's rangeland resources department.

TOXIC MODEL

A U.S. Environmental Protection Agency researcher and two OSU scientists are cooperating on the development of a computer model that will help them learn more about how plant roots absorb toxic chemicals from the soil and water.

The model will be useful with a wide variety of chemical compounds that might pose a threat to the health of plants, animals or humans, say the scientists, who hope to begin testing the model within six months.

"It's simply impossible to characterize the behavior of every individual plant, with every chemical in every type of soil and environment," says Tom Lindstrom of OSU's soil science department. "We need this type of model to provide a more versatile monitoring tool in a number of different situations."

Lindstrom, OSU soil scientist Larry Boersma and EPA plant physiologist Craig McFarlane are collaborating on the work, which is part of an EPA risk assessment program.

"Some of the work done in the past has found certain types of correlations between toxins in the soil and those in the plants, but the conclusions are weak," McFarlane said. "We're particularly concerned about hazardous chemicals that might get passed along in the food chain, whether for humans, agricultural animals or wildlife. Ideally, we'd like to know what is going to happen to various chemicals before they are applied."

According to the researchers, soil and groundwater can contain a wide variety of toxins that may have been deposited through wind and rain, accidents that involve toxin spills, agricultural operations, or other means. Not much is known about about if, or how, various plants absorb various toxins.

Futher concerns, they say, include how a plant stores or metabolizes toxins, whether various toxic compounds can be located in leaves or fruit, and how toxins in the environment change into less harmful or more harmful forms.

CAN YOU HELP, DOC?

Veterinarians can neuter a cat, vaccinate a dog, or help a mare deliver its colt. But what can they offer a sick llama? Take two aspirin and drink some hot alfalfa soup?

This curious native of South America is apparently here to stay. Llamas have become a trendy new status symbol, make a great pet, and are one of the hottest investment items of the 1980s. Everyone seems to like them, whether for wool, pack animals, profit or as a kid's best friend.

But there's a problem. Despite their popularity, they remain something of a medical enigma. OSU veterinary researchers are trying to remedy that, because Oregon has become the country's llama ranching capital.

"We're asking basic questions about llama medicine that we addressed with other animal species 20 years ago," says Brad Smith, an assistant professor of veterinary medicine.

"A good show-quality female llama can cost $20-50,000, and one male recently brought more than $80,000," Smith says. "But those prices are paid for an animal that can still get sick and die just like any other. A lot of vets really don't know how to treat them, and that's one reason we need to improve our understanding of the species."

OSU is becoming a national leader in llama research, with about 14 faculty members involved in different parts of the program and a small research herd under study. The doctors are studying their internal medicine, problems with reproduction and parasites, and other aspects of veterinary care.

DAVE STAUTH

Veterinary scientist Brad Smith examines a new patient. OSU is becoming a national leader in llama research.

Llamas thrive in Oregon's mild, moist climate. There are thought to be more than 300 llama ranchers in the state, raising more than one third of all the animals in the country. One of them is Dan Schoenthal at "Llamaland" near Marion in the central Willamette Valley.

"The ancient Incas in South America had a very sophisticated llama management program," Schoenthal said. "But we lost that 300 years ago when the Spaniards invaded. Now we're trying to get it back."

Schoenthal said much progress needs to be made with llama medicine, nutrition, breeding, wool and livestock technology.

According to Smith, that demand has caused llama prices to skyrocket, with increases of 20-100 percent each year. The growth of the North American llama industry has been so explosive, he said, that veterinary programs must begin to recognize it with the necessary research and student instruction.

Llamas can live 20-25 years, Smith said, and usually grow to 300-400 pounds. They were first brought to the United States in the 1930s, but imports are now restricted due to concerns about disease in foreign herds.

A NEW IMAGE

Selling turkeys isn't what it used to be, and OSU researchers hope to help growers take advantage of that

BY HOLLY HARDIN

It looks, smells and tastes like ham. But it comes from a creature that has wings.

It's turkey ham, and it and products like it are the main reasons why the bird many of us associate with Plymouth Rock and the Pilgrims is developing a new commercial image.

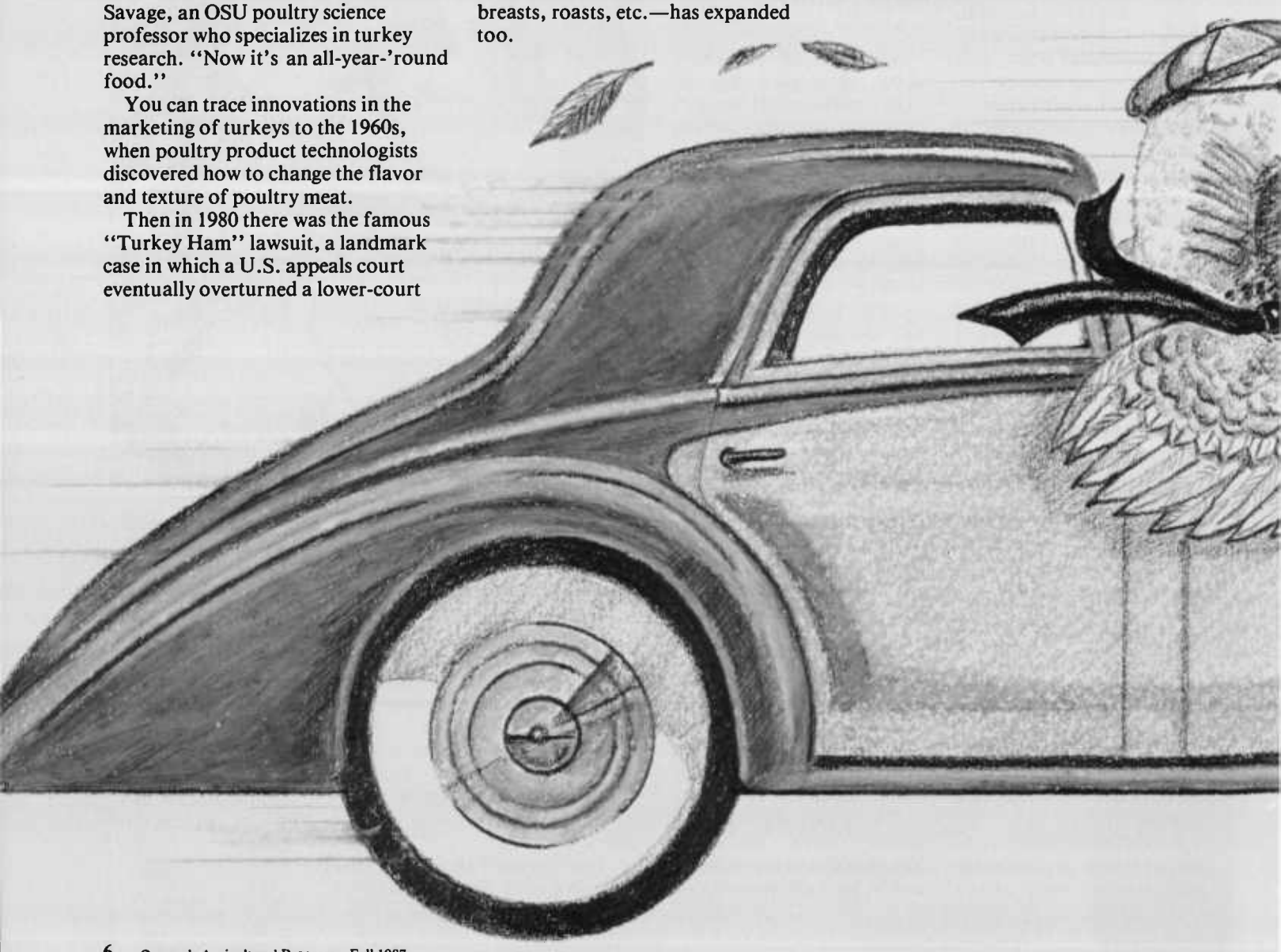
"The turkey used to be a product associated with Thanksgiving, Christmas and Easter," says Tom Savage, an OSU poultry science professor who specializes in turkey research. "Now it's an all-year-'round food."

You can trace innovations in the marketing of turkeys to the 1960s, when poultry product technologists discovered how to change the flavor and texture of poultry meat.

Then in 1980 there was the famous "Turkey Ham" lawsuit, a landmark case in which a U.S. appeals court eventually overturned a lower-court ruling and allowed the term ham to be applied to products other than pork.

That seemed to open the floodgates to turkey being marketed as a less expensive, low-calorie alternative to beef and pork products. New products began to appear rapidly, and today we have turkey ham, turkey bologna, turkey salami, turkey pastrami, turkey sausage, turkey bacon, ground turkey, and so on. The marketing of turkey parts as a convenience food—wings, breasts, roasts, etc.—has expanded too.

Such innovation also occurred with chicken, as in the case of chicken nuggets and chicken sandwiches and franks. But traditional uses of chicken remained popular. With turkeys, Savage says, "the concept of whole-bodied birds being sold in the grocery store is almost an extinct species." There are always a few turkeys in the freezer case. But, except around holidays, whole turkeys don't sell the way whole chickens do.



The selling of turkeys isn't all that has changed. The way the birds are raised has changed dramatically over the last few decades.

It used to be that U.S. farmers grew turkeys in an informal way. They let the birds range freely and fend for themselves. Raising turkeys usually was a sideline.

Today, turkey farming is a billion-dollar-plus industry. Profitability depends on controlled, scientific poultry raising practices producing a product in the most efficient manner possible.

It is more expensive to feed a turkey in Oregon.

And the turkey boom is just beginning, Savage and others associated with the industry predict. It is estimated that Americans will eat an average of 16.0 pounds of turkey in 1987—more than 10 times the amount eaten in 1930. While certainly welcomed, the turkey boom is presenting big challenges to growers and scientists like Savage.

Oregon was 17th in the nation in turkey production in 1986, with total sales of 1.5 million birds worth $11.7 million. One of the growers' major problems in producing the birds efficiently is the cost of feed, almost two-thirds of the cost of raising a turkey. It is more expensive to feed a turkey in Oregon than it would be to feed the same turkey in, say, North Carolina, the state that produced the most turkeys last year.

Usually, turkeys eat a combination of a grain, most often ground yellow corn, and soybean meal. Both are grown primarily in the Midwest and shipped to other regions. Shipping is costly for Oregon growers and, ultimately, Oregon consumers.

One part of Savage's research involves trying to reduce this feed cost problem by finding alternative grains and protein sources that will grow well in Oregon and satisfy the needs of birds grown here.

The researcher tested fababeans, an experimental crop being grown in the Willamette Valley. "Fababeans do not appear to be suitable for turkeys," he says.

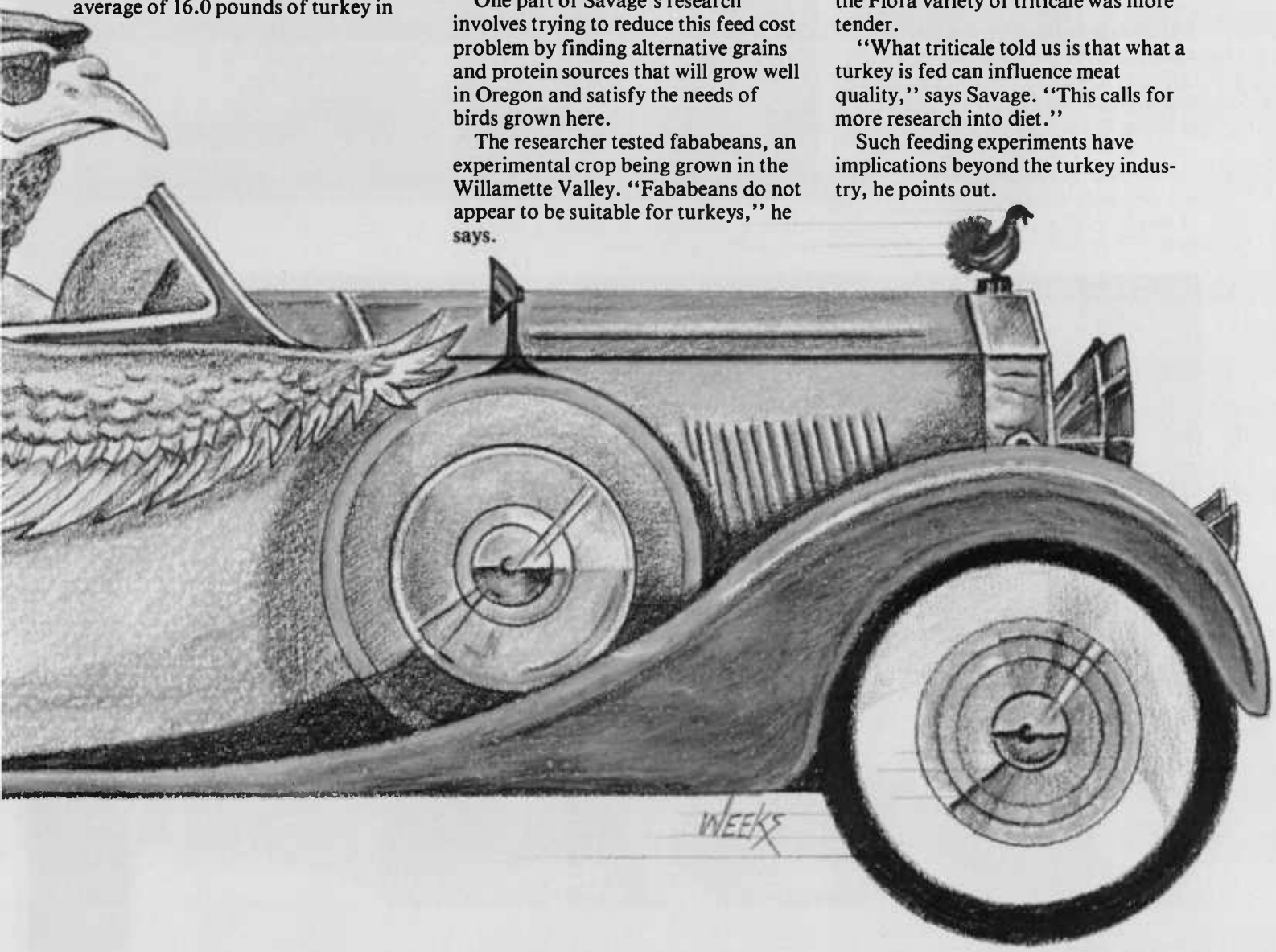
Now he is testing a variety of yellow peas named Miranda, a promising feed that a Halsey, Oregon, seed breeder recommended to him. Savage's findings indicate that the yellow peas, which can be grown in the Willamette Valley, can replace some but not all of the corn and soybean meal used in Oregon turkey feed. This will be especially important if soybean prices increase significantly, he says.

In another experiment, Savage tested as turkey feed a grain called triticale, a wheat-rye cross. Flora, the particular triticale variety tested, was developed by crop scientist Matt Kolding of OSU's branch agricultural experiment station at Hermiston for production in the northeastern corner of Oregon.

The protein level of this triticale variety proved to be low for turkey feed. But a study with male breeder turkeys yielded other useful information. The meat of the breeder birds fed the Flora variety of triticale was more tender.

"What triticale told us is that what a turkey is fed can influence meat quality," says Savage. "This calls for more research into diet."

Such feeding experiments have implications beyond the turkey industry, he points out.



"It comes down to trying to look for other marketing avenues for Oregon farmers," he says. "My philosophy is, lets evaluate any grain or alternative protein source grown in Oregon and see how it does as a poultry feed. Maybe we can reach a point where Oregon-grown turkey means not only grown here but also that the feed is grown here. It's using turkeys as a vehicle for marketing other Oregon agricultural products."

It's physically impossible for modern, domesticated turkeys to mate.

While trying to cut turkey growers' costs, as well as find outlets for other state crops, Savage and associates also are looking for ways of naturally enhancing the quality of turkey meat.

He is teaming up with another Agricultural Experiment Station researcher, foods and nutrition professor Zoe Ann Holmes from OSU's College of Home Economics, to investigate the role of genetics in turkey meat quality.

"We're trying to find out if there are specific genes that control the quality of meat," he says. "I think they exist."

Holmes and Savage are comparing the meat of the three most common commercial turkey strains in terms of taste, texture and juiciness. They are basing their evaluations on mechanical tests and human taste tests.

Savage focuses many of his experiments on breeding stock.

It's physically impossible for modern, domesticated turkeys to mate because they've been bred to have huge breasts, thighs and drumsticks. So artificial insemination is a key to the modern turkey industry. Savage has studied some aspects of that, such as semen production in toms. One goal is to collect information that could help growers make existing turkey strains more productive. Long-range genetic research is aimed at helping the turkey industry develop new strains that will grow faster and produce more eggs.

Some of Savage's other research is aimed at helping humans in ways other than improving turkeys as a food source. He believes the birds can offer insights into human ailments.

For example, one turkey disorder

Above: A faster-growing turkey is one aim of genetic studies. Below: Researcher Tom Savage with the OSU flock.

TURKEY TRIVIA

The turkey's time of notoriety, the Thanksgiving-Christmas period, is upon us. Here are some tidbits gleaned from a publication called the "The Turkey Answer Book" put out by the National Turkey Federation. The information might come in handy if you're making small talk:

Recently discovered fossils suggest the turkey first roamed the earth 10 million years ago. It is native to the Americas.

No one knows who first domesticated the turkey. There's evidence that they were confined by Native Americans in the Southwest as early as the time of the birth of Christ. Some believe the Aztecs in Mexico were the first to domesticate them.

Columbus, and later Hernando Cortez, acquired a taste for turkeys and took some of the birds back to Europe. By 1530, they were being raised domestically in England, France and Italy. So the Pilgrims were already familiar with raising and eating turkeys when they got to the New World.

A few other random morsels:

Not all turkeys gobble, just toms. Hens make a clicking noise.

The foil packets Neil Armstrong and Buzz Aldrin opened for their first meal on the moon contained roast turkey.

A company in Texas uses turkey skins to make cowboy boots.

Domesticated turkeys don't fly much. Wild turkeys do for short distances. They can reach speeds of up to 55 miles per hour. They can run at 25 miles an hour.

Israelis eat the most turkey—28 pounds a year per capita. Americans eat about 16 pounds a year. People on the West and East Coasts eat more turkey than Midwesterners.

Commercial turkeys have white feathers because colored feathers contain pigments that, when plucked, can leave dark spots under the skin. The spots are thought to be unappealing to consumers.

If you're desperate, people yawn through all of the above, try slipping this in:

Did you know that in the early American West turkeys were trailed like cattle? One of the earliest "turkey drives" was over the Sierra Nevada mountains from California to Carson City, Nevada. Hungry miners paid five dollars apiece for the birds.

If that flops, steer the conversation toward pumpkin pie.

—A.D.

may give psychologists additional information on a cause of human depression.

Today, most turkeys are raised in a controlled, indoor environment under artificial lighting. Occasionally, a poultry scientist finds a bird that is unable to hold its head up. Instead of walking with its head held high, this type of bird looks like it is bobbing for apples. They call these birds "bobbers." Until a few years ago, nobody knew how to cure the condition. Savage's predecessor in the OSU poultry science department, Jim Harper, discovered that after bobbers were exposed to several hours of direct sunlight on a daily basis, they held their heads up like other turkeys. Savage notes that the number of depressed people in the northern United States increases during the winter months.

"It's not a significant thing for the turkey grower. Most might never see a bird like that," says Savage. "But it could be an animal model for the study of a human ailment."

Depression should not be a problem for the turkey industry.

Poultry (chicken and turkey) consumption nationally now has exceeded that of pork and is gaining on red meat. In the next five years, Savage

"The industry is going to grow."

sees a continuing increase in turkey consumption, with the emphasis on more and more processing of turkey into easy-to-use products that fit fast-paced American society. The National Turkey Federation, a trade organization, is promoting turkey as a "trendy, new" meat for todays "grazers, who like finger foods and eating throughout the day, wherever and whenever hunger or the mood strikes them."

Oregon's turkey industry always will face the hurdle of shipping costs, of being further from the population centers than North Carolina, Minnesota and California and other top turkey-producing states, says Savage.

"But the industry is going to grow because we have a very good environment for turkeys here in Oregon," he says. "It's not too cold in the winter, so insulation costs and heating costs aren't high like they are in other parts of the country. And we don't have the scorching summers like the big turkey-producing Southern states like Arkansas and North Carolina, so we don't need to have the controlled summer atmosphere like they do."

OSU journalism student Holly Hardin wrote this article while working as an intern on the *Oregon's Agricultural Progress* staff.

Oregon's burgeoning wine reputation
still rests with a fickled charmer

GRAPE EXPECTATIONS

BY JOE CONE

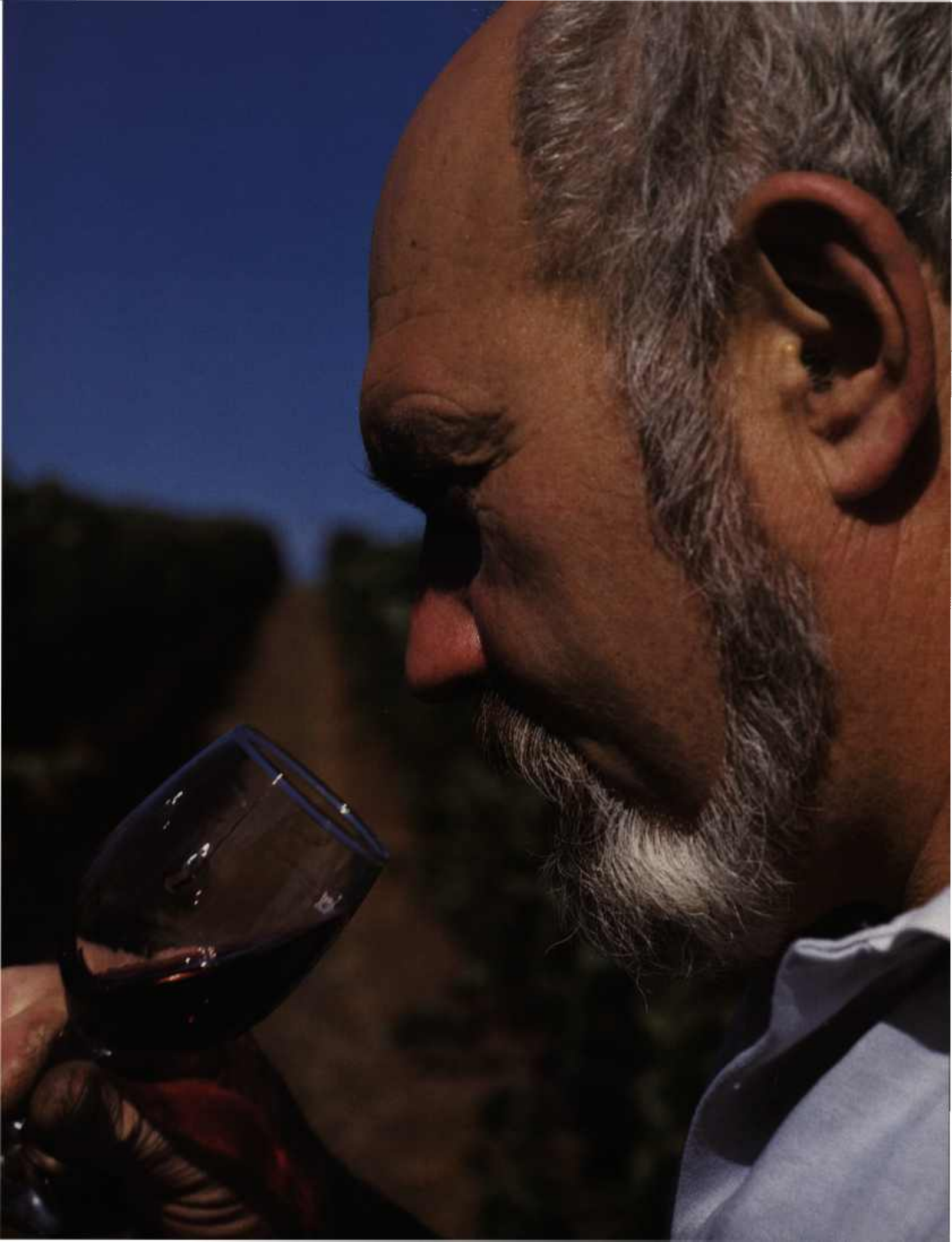
The hillside in Dundee was a mess when Dick Erath first saw it. What once had been orchard was then acres of muddy slope, gouged and rutted and littered with piles of dead trees destroyed in the infamous Columbus Day storm of 1962. Blackberries lay over the heaps of the old limbs and trunks, snagging them like barbed wire. Blackberries. That was the kind of vine that did well in the Willamette Valley. Stubbornly, Erath pictured another vine for this hillside.

Today, nearly twenty years later, rows of grapes undulate over this broad hill and the one adjoining it, and another one out of sight down the road; 118 acres in all. From these grapes, Erath makes wines that have achieved recognition not only in Oregon but increasingly throughout the rest of the wine-drinking world.

Erath was one of the pioneers of the Oregon wine industry, and the Knudsen-Erath winery is Oregon's largest. But his success—going from bare ground to international recognition—is shared by others in the Oregon industry. The growth, whether measured in quality or quantity, has been impressive. Only one winery was producing European style wines 20 years ago, and it was less than five years old. In 1987, 55 Oregon wineries are in operation. Last year they produced about 700,000 gallons of wine from European-type wine grapes. Wine sales in 1986 increased 19 percent over the year before and were valued at some $10 million wholesale.

Opposite page: Winemaker Dick Erath.

DAVE KING



The progress in quality has been no less remarkable. Few of those who arrived in Oregon in the late 1960s and the 1970s to make wine had had any extensive experience doing it. Yet today, Oregon wines regularly win top prizes in national and even international judgings. What is the secret of this success?

Simply put, the secret is knowledge. But of course gaining knowledge of something like the cultivation of a fruit in a new region is neither simple nor quick. Researchers at OSU have played an important role in developing this knowledge, increasingly during the last decade. But 20 years ago there was only unplanted ground and the desire to make something fine.

"Recounting his moment of inspiration, the words rush out."

In 1967, Dick Erath was making a living in the San Francisco area as an electrical engineer. His passion, however, was wine. He had been looking intently in hilly, cooler regions of California for a location where he could grow the grapes to make the kinds of wine he wanted. He was getting frustrated with how limited the choices seemed. Then he had an inspiration. Erath is a big man, a genial bear of a man, and normally he speaks rather slowly, picking his words as if perhaps he were picking grapes to see if they are ripe. But recounting his moment of inspiration, the words rush out. "I thought, why do I have to pick out such a little microcosm to make wine? This should be able to be done on a large scale." And then the thought triggered, "Why aren't they doing this in the Northwest?"

Indeed. Few people in the 1960s had ever thought of it for Oregon. A wine industry had existed in the state, both before and after Prohibition. But the grapes used were primarily native American varieties like Concord and Van Buren, not the *vinifera,* or wine-making, varieties from which most of the world's fine wine is produced. There was no particular sense from OSU that things could be different. California dominated the *vinifera* wine industry in the United States, and the University of California at Davis dominated wine education and research. Researchers at the Davis school ignored Oregon as a wine-producing region, and in the 1960s no one at OSU thought to second-guess them.

Erath was one of the first people to see the possibilities for radically different grapes and wines here, for though the climate of the Willamette Valley might seem pale stuff to many Californians, to him it seemed ideal. In its mild winters and sunny but not scorching summers it was similar to Burgundy in France, and Erath, for his part, was serious about making the great red wine of Burgundy, Pinot Noir. In 1969 Erath moved his family to Yamhill County in the northern Willamette Valley.

Other grapes—Chardonnay and Riesling in particular—have done well in Oregon and have done the fledgling industry well. But the production and the reputation of Oregon has been from the first linked to Pinot Noir. The wine holds a special fascination for people seriously interested in wine, and for winemakers especially.

"Pinot should have a seductive, intriguing aroma to it," says Erath, trying to explain. "And the taste—it should be a culmination of complexities.

"Everything about the wine should be harmonious." He smiles. "And, as the wine ages," he continues, "its components will meld together until they form just one...pinnacle."

For winemakers, this sensory romance with Pinot is one kind of attraction. It is complemented by a

DAVE KING

DAVE KING

DAVE KING

Left: In 1962, winemaker Dick Erath envisioned growing Pinot Noir grapes on this hillside in Dundee, now covered with vines. Top: Pinor Noir grapes. Above: OSU research assistant Steve Price picks Pinor Noir grapes.

charm of another lustre, the grape's market potential.

Pinot Noir is versatile. It can be made to be drunk young in a *nouveau* style, like a French Beaujolais. Or, if weather dictates or the market prefers, the dark grape skins can be removed before fermentation, and a white or lightly colored "blush" wine, a style currently quite popular, can be made. Or, yet again, if the grapes are harvested at their peak and fermentation goes well, a complex "premium" wine can result, which will continue to improve in the bottle over ten years or more. Such Oregon Pinots from the best vintages may command $15 or more per bottle—expensive for everyday use certainly, but perhaps not expensive compared to French Burgundies, which sell here for easily twice as much.

They had the most important determinant of great Pinot.

Attracted by such features of quality and marketability, more places, one would think, would be planting Pinot Noir and tapping the market. It's not that other places haven't tried. California, the biggest example, has produced a good deal of Pinot, but until recently almost all of it, by the producers' own estimation, was fit only for jug wines. Similar experiences have occurred around the globe.

The problem with Pinot, with this seductive, appealing charmer from France, is that the grape is, as the growers like to say, "fickle."

The climate in most of California, for example, is too hot. The grape ripens, but it doesn't develop its full characteristics. It doesn't progress through the critical stages of maturation where its flavor goes from pie-cherry to raspberry to just the cusp before plum. Once fully into plum, it has gone too far, says Erath. Unfortunately, in most of California this progression, this maturation of flavors, doesn't happen at all.

In the Willamette Valley, the growing season is potentially right—long enough, sunny enough, not *too* hot—to bring out the just-before-plum. Even so, the leeway between success and failure at the grape-picking stage is scant. Five days, Erath says, can be the difference "between disaster and a great vintage," because the time in October when Pinot Noir is usually ready to be picked is often just before the first fall rains. And the first heavy fall rains turn the fine complexity of the fruit, achieved over a long, sustained, growing season, to pap. The water-starved vines suck the rain up and dilute the fruit. The result again: a product fit only for jug wines.

Then again, should it rain during the summer, Pinot is susceptible to mold and mildew. Enough mold and the grower is faced with a devilish bargain—harvest the grapes early or run the risk of not harvesting much at all.

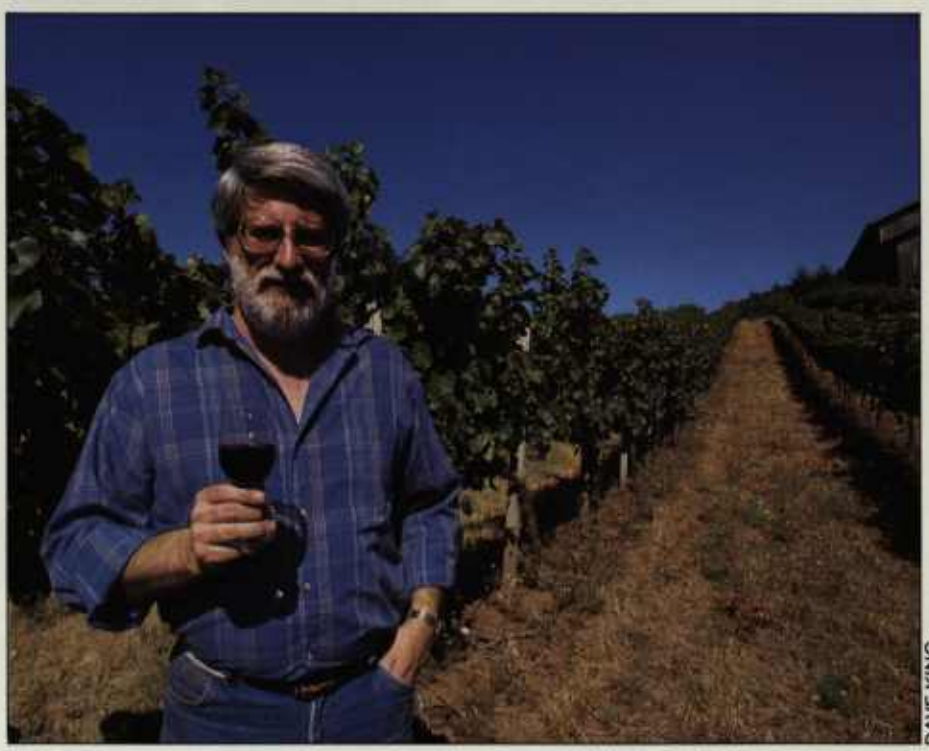
DAVE KING

In the face of such trickiness, such tickleishness, such "fickleness," what is a winemaker to do? The answer, Oregon's pioneer winemakers saw, was to get control over as many variables as possible. From the beginning they believed they had the most important determinant of great Pinot, climate, on their side. From there, their task, which continues to evolve today, was to find the right Pinot Noir grapes to grow and the right way to grow them here.

In this quest OSU has cooperated closely. Today, virtually every one of the dozen research projects jointly supported by the Agricultural Experiment Station and the Oregon Wine Advisory Board concerns Pinot Noir development to a greater or lesser degree. This active cooperation between the industry and the university goes back to the mid-1970s.

Perhaps the most widely known collaboration began in the late '70s when OSU's Barney Watson, a food science instructor whose primary job was experimental winemaking, got into

Above: Experimental vines at the Woodhall III Vineyards near Alpine. Below: Winemaker David Adelsheim at his vineyard near Newberg.


DAVE KING

discussions with Dick Erath and David Lett, another Oregon Pinot pioneer and the owner of the Eyrie Vineyards at Dundee.

As Watson explains it, the three noted that organisms in Erath's and Lett's wine called malolactic bacteria seemed to be especially well suited to Oregon winemaking conditions. Malolactic bacteria cause a fermentation that "softens" or reduces the acidity of Pinot Noir and Chardonnay wines and also increases their complexity. Other Oregon winemakers could buy commercially available strains of malolactic bacteria, but the strains had difficulty fermenting Oregon wines. Bill Sandine of OSU's microbiology department, and Watson and food scientist David Heatherbell of OSU's food science and technology department, developed a cooperative project to isolate and characterize the beneficial malolactic bacteria strains in Erath's and Lett's wines.

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ANDY DUNCAN

Above left: Viticulturist Mark Chien of Temperance Hill Vineyards, Salem, samples wine at an OSU tasting. Left: Viticulturist Porter Lombard supervises OSU's wine-growing program.

Sandine and his graduate students isolated two especially promising strains, which were tested in pilot plant and commercial winery trials. The bacteria did a good job of fermenting Oregon wines, which tend to have a high acid content.

By 1983, Watson was distributing the bacteria strains to the commercial wineries in the state. This allowed state wineries to use malolactic bacteria adapted to Oregon instead of bacteria developed in other wine-growing regions.

But before a vineyardist gets concerned with wine-making, there's grape-growing to be contended with, and before that the fundamental question of the right Pinot to plant. A grapevine produces grapes from 35 to 50 years, so this is clearly an important consideration in the life cycle and the success of this industry.

Garren obtained vines of 10 clones and planted them at OSU.

However, in the late 1960s the choices of Pinot to plant were limited. Grapevines come in different clones, which have slightly different traits from other plants of the same variety. Different clones of a particular grape may have, for example, berries of different sizes, or differently shaped clusters, or yield more or less fruit. It's an advantage to have a selection of clones to choose among. At first, Oregon growers were limited to about five clones of Pinot Noir, all of them from California sources.

Some of the stock came from commercial growers, some from the University of California at Davis. Davis was the source of stock that was certified virus-free. That was considered an advantage by many Oregon growers when they planted their first vineyards. But as David Adelsheim explains, it became apparent that whether a clone was virus-free wasn't the only consideration.

Adelsheim is one of the second wave of winemakers who established vineyards in the northern Willamette

Valley in the early 1970s. His Adelsheim Vineyards stretches across a slope of Chehalem Mountain, near Newberg, and he had just begun to plant it when he had an experience that made him question what he was doing.

As he tells the story, he tasted some Oregon wine that was made from Pinot Noir grapes he believed were "pirated" into Oregon from Europe. The wine was better, he felt, than those made from the two clones of Pinot that Oregon growers had obtained from Davis.

"My concern was with making the best wine," says Adelsheim. "The U.S. Department of Agriculture's concern was to prevent virus disease of wines. What we had was very 'clean' material, but we weren't convinced they were necessarily very good clones."

A group of Willamette Valley growers, Adelsheim and Erath among them, decided that they needed to obtain other clones of Pinot and evaluate them for potential planting. In 1974 they turned to Ralph Garren, an OSU Extension Service horticulturist now retired, for help in getting a selection of Pinot Noir clones from Davis.

Some of the Davis clones were from uncertain sources; others were from California, France and Switzerland. But the clones showed differing characteristics when tested in California, and the Oregon growers felt that testing them in Oregon would be valuable. Garren obtained vines of 10 clones and planted them at OSU. For the testing program he would grow them up, make identical daughter plants from them, and then distribute them to selected Oregon sites.

The growers realized that they had embarked on a potentially long-term research undertaking, says Adelsheim, with more than one answer as a goal. It wasn't only a matter of selecting the best clone to make the finest premium Pinot Noir. Another goal of a clonal evaluation project would be the discovery of other clones that might produce high yields of grapes that lend themselves nicely to being made into everyday-priced white Pinots, roses, or even sparkling wines, but not red Pinot Noirs.

Fortunately for the growers and their university collaborators, the Pinot Noir grape lends itself to this sort of investigation. Says Adelsheim, "There are probably more clones of Pinot Noir than any other grape variety." The reason perhaps lies in the fact, he suggests, that Pinot has been cultivated in France for more than 1,000 years, and has been propogated from seed, which allows genetic variations to abound. At a French research station in Dijon more than 300 clones of Pinot currently are being grown and tested, and these are "just the clones that have been selected," the Oregon winemaker points out. Perhaps hundreds of others exist.

The climate is right for Pinor Noir grapes in Willamette Valley vineyards. Still, the grapes must be picked

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Pinor Noir at OSU's experimental campus winery.

The room was at a hush, broken only by the swirl of wine.

However, back in 1974, Oregon growers were only getting familiar with the whole idea of clonal selection. They knew, though, that apart from the Davis selection they wanted to obtain some Pinot clones from France. Adelsheim had connections in Burgundy as a result of time he spent at the famous wine-making school there, the Lycee Viticole in Beaune.

At first, he says, the growers wanted to import vines on their own, but the U.S. Department of Agriculture was concerned about entrusting the growers with the responsibility of doing the required virus evaluation and quarantine work.

Once again, OSU completed the connection. Ron Cameron, an OSU plant pathologist, was willing to do the quarantine work, and Cameron obtained an import permit, which made him, incidentally, one of only three people in the United States who can legally import grape stock and certify that it is virus-free. Three Pinot clones were obtained from France, were certified by Cameron, and were added to the other 10 in the OSU testing program.

During this period of the late 1970s, research efforts on wine got a boost with the development of a new funding mechanism within the state. In 1977 the state legislature established the

DAVE KING

at just the right time.

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Horticulturist Pat Breen, supervises two OSU graduate students doing wine research.

Table Wine Research Advisory Board, which began funding research at OSU. In 1987-88, Wine Advisory Board funding to the university amounts to some $120,000, in 12 projects.

In 1979, the Pinot Noir clonal testing program entered its next phase when 12 vines of each of the 13 clones obtained from outside Oregon were planted in two Willamette Valley vineyards, Five Mountain Vineyards at Cornelius and Knudsen-Erath at Dundee. The testing program has been "very much a cooperative effort," says Barney Watson. Porter Lombard, a viticulturist in OSU's horticulture department, has supervised the vine-growing program, which is managed by research assistant Steve Price. The growers themselves have cooperated by maintaining the plots.

The fruits of all this labor began to be realized in 1983 when Watson made wine from each of the Pinot Noir clones. In 1986, and again this spring, Oregon winemakers and grape growers were invited to the university to critically appraise these clonal wines.

The scene this May, in a large campus tasting room in Wiegand Hall where the food science department is housed, was not the way one normally sees wine being drunk. A group of poker-faced people sat at large tables, 13 wine glasses rayed out in front of each of them. Each glass was about one-quarter full with a red liquid labelled only by number. The room was at a hush, broken only by the swirl of wine in the glass, the occasional slurp-in or spit-out of a purposeful tasting, the sound of pencil making notes on a form. "It *is* hard work," Watson conceded with a smile, after the fourth hour of this.

Results of the clonal tastings, recently published in an OSU report, indicate that the winemaker panel found definite differences between the clonal wines.

"Differences were observed in overall intensity, varietal aroma and flavor, and complexity, as well as in the wine's fruity, berry and spicy character," the report notes. Some of the clones look as if they have potential for making good premium red wines, Watson adds. Others look as if they would lend themselves to whites and sparkling wines.

"The French have taken a liking to us."

Limited quantities of cuttings from the vines in these trials are provided to commercial growers and, when available, to amateur winemakers.

The OSU-industry collaboration on Pinot Noir attained a new level in 1984 with the arrival of a new set of clones from the French wine research station at Escheveron, in Burgundy. These are held in great expectation by Oregon interests, says Watson.

"Because a lot of European vineyards got decimated in World War II, there was a real push to rebuild them, given the importance of wines to their economies," he explains. "So there are government-sponsored research institutes that have done tremendous work."

From the French research station, OSU received "the cream of the crop of their clonal studies—the ones they are recommending to their industry there," says Watson. "What may have taken them 30 years to develop, given all the field work, the selection of clonal material, the testing, we're getting," he adds. He believes it will take only seven years to test the clones here. And he's enthusiastic at the prospects. "Already," he says, "we have at OSU the best clonal information about Pinot Noir of any place in the United States."

Why the largesse from France? The desire for *amis du vin*—comrades in wine? Something of that, Watson suggests.

"The French have taken a liking to us," he says. "There's never been a place before to have the potential for the same kind of quality Pinot Noir as in France, and they're frankly intrigued." On a practical level, Watson adds, "they like us because we're small and our wines are distinctive. There'll always be a place in the world market for Oregon Pinot Noirs and Bungundy Pinot Noirs."

And where is Oregon's place? Consider what Robert Parker, the respected editor of the *The Wine Advocate* newsletter, had to say when *Oregon's Agricultural Progress* contacted him at his office in Maryland.

"At their best," Parker said, "Oregon Pinot Noirs have a freshness and purity that make them the finest outside of Burgundy. They have very great promise."

What should Oregon be doing to realize that promise, Parker was asked.

"Ah," he said. It was a sound of despair for the inexplicable. "Pinot Noir," he uttered solemnly, "is a fickle grape." A pause. A sigh of respect.

Now a hopeful tone. "The Oregon industry is still in its infancy," he said, "and how good Oregon Pinots will be is an answer only for the future. But you can't make the best wine without the best-suited grapes. Clonal selection is just about everything.

"I think you're going in the right direction there. It'll be interesting to see how it all turns out."

Indeed.

Science writer Joe Cone lives in Eugene, Oregon.

ERIC FORSMAN

RISKY BUSINESS

The spotted owl controversy has two OSU biologists looking nervously at an unusual strategy: "deliberately reducing" a creature to the near-endangered level

BY DAVE KING

When you read the editorials and talk to your neighbors, the facts seem simple and the answers seem simplistic. It's kind of like taking a true/false test. You're either right or wrong, right?

But the fact is that economic survival for many people in the wood products industry is dependent on cutting trees that are, in turn, a source of life for an important portion of the earth's fragile ecosystem, the northern spotted owl. All of a sudden, the facts aren't so simple and the answers tend to stick like a lump in your throat.

Old-growth Douglas-fir forests in Oregon are home to many animal species. But the one attracting the most attention these days is the northern spotted owl.

It's a smallish, crow-sized bird with an endearing trait of rocking from side to side as it watches you watch it. But the spotted owl, whose home range includes parts of Oregon, Washington and northern California, is at the center of a heated controversy in the Pacific Northwest.

There are other spotted owls around. The California spotted owl lives in the southern Sierra Nevada mountains, and the California Coast Range mountains. And the Mexican spotted owl lives in Arizona, New Mexico and parts of Utah and Colorado, as well as Mexico. These birds are not abundant, either. But they cause less controversy mostly because the timber land they inhabit has less monetary value than that of the Pacific Northwest.

Opposite page: An adult northern spotted owl

In the Northwest, the basic question is often put this way: How much spotted owl habitat should we save if the price we pay is a loss of lumber industry jobs? This is a drastic and erroneous over-simplification of a complex issue.

Probably because of this, for many in the Northwest it's an easy way to polarize a conversation. Just bring up the subject of balancing spotted owls with timber-based jobs. It brings back memories of the snail darter, a small fish on the federal endangered species list that held up completion of a multi-million dollar hydroelectric project in Tennessee for years.

But the snail darter was a non-Oregon-based ecological problem. The spotted owl is a hometown challenge, literally in our own backyard.

As part of a newly formed team organized to deal with the challenge, Pacific Northwest researchers and forest managers, including a couple of fisheries and wildlife scientists from OSU, are taking a unique approach.

They will help create a forest management plan calling for a reduction of the spotted owl population to levels just above what it would take for the bird to be placed on the federal endangered species list. OSU wildlife biologist Chuck Meslow, a member of

the team, says he's being asked to walk an ecological tightrope.

"I'm not aware that biologists have ever been faced with deliberately reducing a population to a minimum level with a charge of not letting it become endangered," says Meslow. "We often face endangered species, but then we're trying to increase them. This is one that's not endangered, but we're planning to manage them down to within an iota of endangered status."

This complex issue can be reduced to a stereotyped battle of owls versus jobs.

In fact, a coalition of environmental groups has petitioned the U.S. Fish and Wildlife Service to have the bird listed as endangered. That petition is under review.

The coordinated effort of wildlife researchers and forest managers in the Pacific Northwest is designed to continue to gain information about the spotted owl but at the same time begin implementing a forest management plan taking into account the multiple uses of forest land.

Even with this team effort, Meslow reveals his worry about the wildlife part of the puzzle. In seeking a balance between spotted owl survival and economic prosperity, the questions become basic.

"What is the minimum amount they can get by with? It's often phrased that way," Meslow says. "We are directed to plan for only a few more pairs than necessary to keep the owl off the endangered species list. And we are to provide each pair with just a few acres more than is minimally required to sustain them."

For wildlife biologists, this is a unique association with the middle ground of a controversial issue. Meslow is not totally satisfied but looks at the issue as realistically as possible.

"The most biologically reasonable thing to do would be to stop everything until we have adequate information about the spotted owl to make sure these long range plans are correct," says Meslow. "But, politically, that's just not feasible."

Meslow and OSU graduate researcher Gary Miller sense a new relationship between some foresters and the wildlife research community. And, they say if the reduction plan has any chance of working, it is because of this coordinated effort.

"There certainly are elements within the forest industry that are more team oriented now than previously. Maybe it's just that they understand the topic a lot better," says Meslow. "I think most of them realize that, yes, there is a problem. And the only way to get at it is to gather information, apply the information, and make some rational decisions."

But rational decisions are sometimes difficult to develop even in the best of times. So the OSU researchers, working in this politically charged atmosphere, maintain their concern about the process.

According to Meslow and Miller, decisions should be made from a "pro-owl" perspective. This, they say, is especially true as the process of reducing owls to minimum populations continues. According to Meslow, forest managers should be required to make decisions that are as beneficial to the spotted owl as to timber harvest.

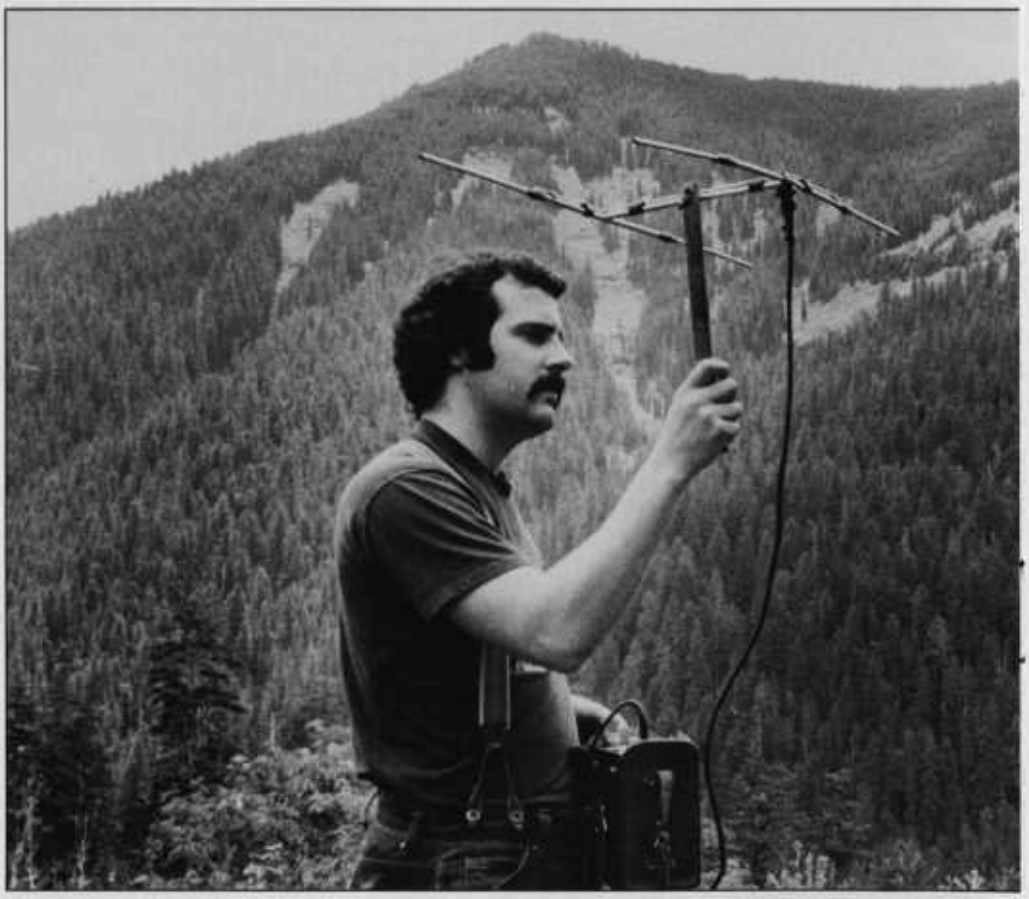
"As we move toward a minimum number of owls and provide each pair with minimum acres of habitat, we ought to at least choose areas that are high-quality owl habitat and choose areas from a pro-owl standpoint," says Meslow. "In addition, forest managers need to be just as accountable for producing owls on their piece of property as they are for producing timber cut."

As you can guess, this thinking is not universal. And this is the source of the wildlife researchers' concern. In recent months newspaper and radio and television news reports have been full of stories discussing the spotted owl and the continuing precarious state of timber industry jobs in Oregon. The recession of the early '80s seemed to come on too fast and last too long for anyone to quickly forget.

So it's easy to see how this complex issue can be reduced to a stereotyped battle of owls versus jobs.

One scenario Meslow proposes depicts economic and ecological disaster traveling hand-in-hand.

"There's no denying that to maintain spotted owls in the Pacific Northwest is going to require foregoing



ANDY DUNCAN

Above: Research assistants Ruth Miller, left, and Kim Nelson rig a fishing pole to catch a juvenile spotted owl. Below: Graduate student Gary Miller tracks a juvenile owl fitted with a radio transmitter.

ANDY DUNCAN

some timber harvest. The impact of that is open to question. But, there's no question there will be an impact on jobs," says Meslow.

Forsman's research is the basis for much of what is known.

"But, if we screw up in this process (reducing the population of spotted owls to just above the level of endangered species) and in fact create an endangered species the law would, in my estimation, require that all harvest of old-growth timber on federally owned lands cease until a suitable recovery plan was developed. The economic disaster that this would entail makes a few lost jobs spread around Oregon pale in comparison."

And realistically, Miller points out, from the wildlife point of view the disaster is just as great. Essentially, old-growth forest is a non-renewable resource. It would take several hundred years for it to return to what it is today. Basically what this means is that if a specific owl population reached a critical state of decline because of loss of habitat, and all logging stopped in that area, the bird still would not return to viability during the lifetime of anyone currently alive.

Once started on this doomsday path, Meslow takes his scenario one step further into a bio-political area as yet uncharted.

He says if the plan to reduce the owl populations should fail or be disregarded and the spotted owl is placed on the federal endangered species list, the economic impact will be great, but the political impact could be tremendous.

"So tremendous that it causes members of the environmental community to be concerned that it would never happen politically," says Meslow. "Instead, politicians would intervene and, in fact, break the Endangered Species Act on the issue of the owl."

The political thinking might be, according to Meslow, that the timber economy of the Northwest is more important than the survival of the spotted owl.

Although there are still many critical answers missing, much is known about the spotted owl. More than many realize. OSU study of spotted owls began in 1972 with the studies of an OSU graduate student named Eric Forsman, now a U.S. Forest Service researcher. Meslow became Forsman's major professor in 1975. Forsman's research is the basis for much of what is known about the spotted owl. Since 1983, Gary Miller has been studying dispersal and reproductive success of spotted owls, under Meslow's guidance.

The latest research results indicate the spotted owl appears to be totally dependent on old-growth forest for survival. According to Meslow and Miller, if you remove old-growth, the owl seems to disappear. It's not just big dead trees, and it's not just big logs on the ground, it's all the attributes of a 200-year-old-plus forest combined that seem to be necessary.

Given this fact, the question that pops to mind is how much? How much old-growth timber land are we talking about setting aside for the sake of one pair of nesting spotted owls?

"Our best estimate right now would be that the average pair of spotted owls is using about 2,250 acres of old growth," says Meslow. "It has been as few as 1,000 acres and as much as 4,000 or more, although no one is very interested in the upper edge of the spectrum."

Miller objects to the characterization of "tying up" timber land for spotted owl usage.

"I think one of the things a lot of people don't realize is that a lot of those areas that owls are using are already set aside for concerns other than maintenance of an old-growth component for timber production," says Miller.

He says there are scenic areas and wilderness areas already set aside, and other areas that are less suitable for timber harvest, that can be counted in the space usable for owls.

"It seems like a lot of times those kind of things aren't brought out," says Miller. "So the thinking is that if we are going to manage for 2,250 acres of timber per spotted owl pair, you're going to have to go out tomorrow and find 2,250 acres of old-growth and take it all out of timber production. That's just not the case."

But Meslow points out the situation can be complicated by the owls' geographic location and the fact that movement from one major chuck of habitat to another is limited. It's difficult, if not impossible, for spotted owls to move from the Coast Range to the Cascades in search of suitable new places to live.

For instance, in the northern part of Oregon Coast Range there is little land set aside as wilderness. And the entire forest is effectively separated from other suitable spotted owl habitat. As logging continues, the owl population is dwindling fast.

"We probably should have stopped logging old-growth in the northern Oregon Coast Range at least five years ago," says Meslow. "But, apparently, that has not been an easy thing to do, politically."

The potential for ecological and economic disaster is quite real.

On the other hand, in most of the Oregon Cascades the situation is not nearly as critical. According to Meslow, because of the greater amount of old-growth forest available, there are many more management options there that work to the advantage of the spotted owl.

This difficulty of movement becomes a factor, then, when you try to calculate how many total pairs of spotted owls are needed to maintain a viable reproducing population. When we arrive at that figure, it will tell us what the actual effect might be on timber harvests.

But, as is often the case with scientists who want to be thorough, Miller and Meslow are hesitant to answer firmly and point to the new direction of their research.

"There's a built-in conflict here. We are constantly acquiring more information. So we'd like to start off with a very conservative estimate. We'd like to say for now, let's hang on to 1,000 pairs of owls and let that erode slowly as we gather better information," says Meslow. "We could intentionally decrease the population, but we should only do that as our knowledge about the bird and how we can manipulate the habitat increases and we feel comfortable about decreasing the numbers."

But both Meslow and Miller are realistic about their part in the newly formed cooperative efforts. There is pressure right now to reduce the owl population to the minimum numbers. In fact, according to Meslow, current timber harvest plans may force them to reach minimum levels in as few as ten years in many areas of Oregon.

Knowing the pressure's on and, if they're wrong, the potential for ecological and economic disaster is quite real, Meslow offers a realistic look at what the minimum levels might be.

DAVE KING

ANDY DUNCAN

Top: OSU fisheries and wildlife professor Chuck Meslow. Above: A juvenile spotted owl in an old-growth Douglas-fir tree.

"One figure that's been kicked around a lot is 400 pairs for Western Oregon. There's some general agreement on 400 being marginally sufficient to preclude genetic problems," says Meslow. "And if we try to distribute the owls at what Gary (Miller) has verified to be a reasonable distance—about 6 miles apart—then 400 would amount to about a pair of owls per township in suitable habitat in Western Oregon."

The immediate future will see a $1 million, three-area research effort stretching from Roseburg and the southern Oregon Coast Range to the tip of Washington's Olympic Peninsula. The U.S. Forest Service will coordinate the work. The basic thrust will be to sample spotted owl populations in representative areas of the Northwest and conduct long-term studies of survival rates and reproductive success.

The OSU researchers have established a study area in the Willamette National Forest supporting 30-50 pairs of owls. Including the other study areas developed by the Forest Service, there will be up to 150 pairs of spotted owls under scrutiny.

"We're trying to separate how much habitat they use from how much they require," says Meslow. "These study areas will be a focus for gathering much more information than we currently have on habitat use by the owls."

As the research process drones on and the political process moves in typical fits forward and back, Meslow stills wonders about a biologist's place in this newly defined process of population reduction.

"It seems clear that the managing agencies are about to reduce the owl population to a third or certainly half of what it is now," he says. "That gives many biologists involved real pause. The drastic action being proposed amounts to performing a grand experiment. But because old-growth is essentially non-renewable, we may well lack the ability to correct ourselves if the experiment fails."

Dave King is a radio-television producer and writer in OSU's agricultural communications department.

A MEMORY OF CHINA

Apparently, blood *is* thicker than water.

The Pacific Ocean separated Kelvin Koong and one his sisters for more than 30 years. But it didn't begin to wash away their bond.

"The culture gap obviously was there, but nothing significant at all compared to the family tie," says Koong, an associate director of the Agricultural Experiment Station.

He is speaking of the day in 1982 in California when he, his mother and father, a brother, and two other sisters were reunited with the sister left behind in mainland China in 1950, shortly after the Communist Revolution.

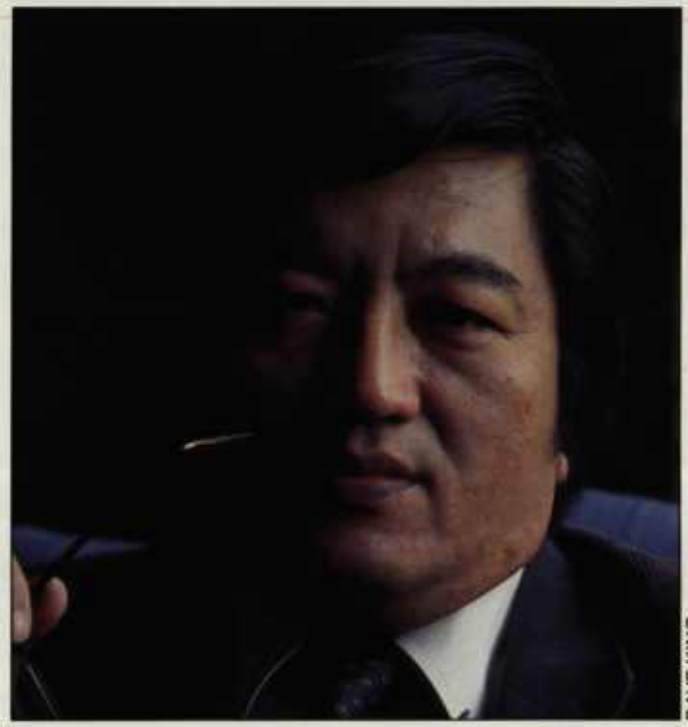
When his family left, Koong was seven and had two sisters aged three and six months. His mother, temporarily separated from his father because of the Revolution, had the terrible responsibility of leaving one child behind. She and her husband believed she wouldn't be able to sneak out of the country with all three.

The middle child, Linshen, was left at home in NanKing with an uncle. "Our family thought, you know, we'll be back shortly," says Koong.

As with many who left expecting to return to their relatives, the curtain closed behind them and didn't open again for decades.

The family, minus one, reassembled in Taiwan and started a new life. Though only 90 miles from the mainland, they couldn't visit Linshen. But "we communicated through different channels, and we knew what she was doing," says Koong.

The children grew and, eventually, Lin-shen married and started a family of her own. At various times, she worked in a commune and a brickyard, always regarded with suspicion because of her family in Taiwan.



DAVE KING

Kelvin Koong

Meanwhile, Koong prepared for and began a second journey. After completing high school, military service and a degree in animal science at National Taiwan University, he set out for the United States, for North Carolina State University.

That was in 1965. By 1968, he had master's degree in animal science with a specialty in beef cattle nutrition. By 1973, he'd applied math to studying beef and dairy cattle nutrition and earned a doctorate in biomathematics.

Then came U.S. citizenship, teaching and research jobs at the University of California at Davis and the U.S. Meat Animal Center in Nebraska (a Department of Agriculture laboratory), and a plunge into administrative work.

Despite a foreign upbringing some might think would be a drawback, he got on well with the straightforward ranchers and farmers of Nevada while serving for several years as associate dean for research of the University of Nevada at Reno's agriculture college. It convinced him such work could be challenging and productive.

His attitude is that an administrator's most important job is to cut red tape and make decisions that provide an environment that helps faculty get their work done effectively. It came partly, he says, from a sense of responsibility for debts he has accumulated since coming to the United States.

"All along the line people—graduate students and faculty—helped me and I hope to pass some of that on," he says. But he adds that in his opinion a strong faculty serves the agriculture industry and consumer best.

Last winter, when he accepted an offer to become an associate director of the Oregon Agricultural Experiment Station, it was partially because he was impressed by OSU's faculty, department heads, branch station superintendents and "a strong tie between the agriculture industry and the University," he says.

"But my wife (a native of Taiwan) and I liked the idea of raising our three sons in Corvallis, too," he says. "We don't make any bones about the importance of family."

The experience with Linshen helped forge his feelings on that.

"We all had guilt feelings, and we just were so grateful there was that opportunity to get her out and be with her again," he says of the 1982 reunion in California (which included a sister and brother not yet born when the family left China).

"Finally, we were a whole family again," says Koong. "Everything else seemed so insignificant."

Lin-shen bore no grudges. She was deeply moved by being reunited with the family, he recalls. But when the time came, she was ready to go back across the Pacific. "Her roots are there," he says. "She's got four kids of her own."

—A.D.

A New Image

(see page 6)

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Oregon's Agricultural Progress

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