# PRUNE DRIERS OF THE PACIFIC NORTHWEST:A BUILDING TYPE COMES TO FRUITION



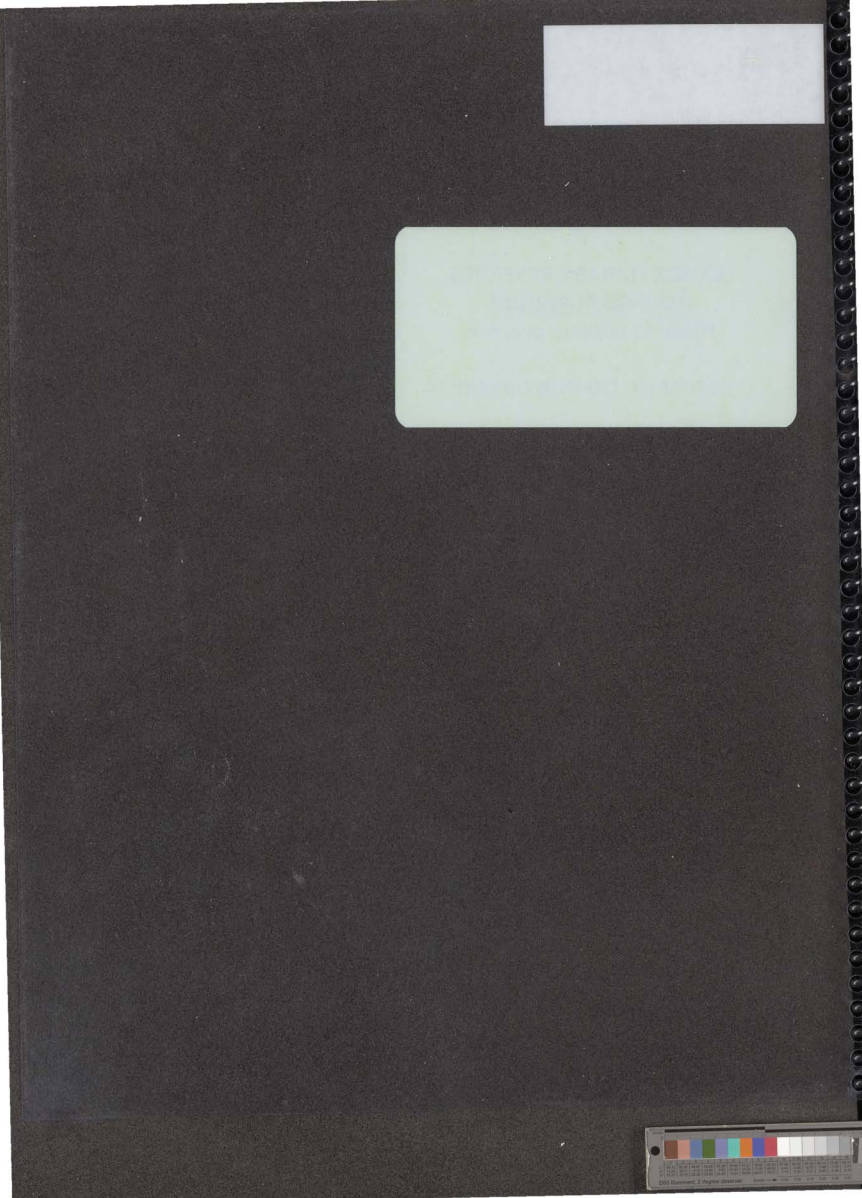
by

KRISTINE NICOLE STECKBECK

A TERMINAL PROJECT

Presented to the Interdisciplinary Studies Program:
Historic Preservation in partial fulfillment of the
requirements for the degree of
Master of Science

March 2012



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## INTRODUCTION

During the author's internship in 2010, an opportunity arose to visit an old prune drier on Orcas Island, located in the San Juan Islands of Washington State. This field trip resulted in the development of a thesis topic addressing geographical, historical and architectural components that fostered the historic industry associated with dried prunes. This study reveals previously unknown information about an industry that has become obsolete in modern times.

## ABSTRACT

The historic built environment associated with drying prunes in Oregon and Washington has been faced with the problem of a changed agricultural economy that has made prune driers obsolete and endangered structures on the Pacific Northwest landscape. There is a need to better understand how these buildings were influenced by local and national agricultural trends during the late 19th and early 20th centuries. Extant prune drying structures generally have been altered and bear little resemblance to their precursors. The present building stock of prune drying structures illustrates the decline of a great pomological industry that peaked in the 1920s. Expansion of the dried prune industry during the late 19th century is reflected in agricultural literature which developed in response to the advent of prune driers. Not only are physical remnants of the dried prune industry rapidly disappearing, but documented information about them is also increasingly scarce.

## TERMS

There are several ways that plums and prunes are defined, both depending on the intended market or physical chemistry of the drupe. The name 'prune' is derived from the Latin *prunum*: "[a] plum, and in its generally accepted designation is applied to those special varieties of the plum family that possess exceptional curing qualities, of firm texture, easily dried whole in the sun, or artificially, without fermenting at the pit."[1] For the purposes of this report, the term *plum* will refer to the green fruit while *prune* will reference the dried, or cured product. The term *drupe* is also used in this paper and is defined as any fleshy fruit that encompasses a hard inner seed.

Pomology, or the study of fruit, is also used in this report, as is *pomological*, which indicates some connection associated with the fruit industry. Although these words are rarely held in today's vocabulary, they seemed to be in popular usage during the late 19th and early 20th centuries. Without further delay, then, is it possible to introduce the subject at hand: the dried prune industry of Oregon and Washington.

# CHAPTER 1: DRIED PRUNE INDUSTRY TAKES ROOT IN THE PACIFIC NORTHWEST,1880-1890

Agriculturists in the Pacific Northwest during the the late 19th and early 20th centuries were presented with an unique climate, to which they answered with cultivation. There are relatively few crops that benefit from an evaporation type of processing, but plums grown in the Pacific Northwest excel from desiccation, which ensures short term preservation. Optimal climate spurred growth of a hop industry, while prunes followed closely once new orchards came into bearing by the 1880s. As the hop and prune industries matured, so too did artificial drying. These specialized structures manifested in Oregon and Washington agrarian landscapes as kilns or driers. Evolution of the hop industry preceded the growth of the prune industry but still played a defining role in how the prune industry depended on artificially heated drying structures.

## Geography of the Pacific Northwest as it Relates to the Dried Prune Industry

The physical location of the Pacific Northwest can be described as the upper northwest portion of the contiguous United States. Although generally this area includes Washington, Oregon and Idaho, this study will focus on the interior valleys of Washington and Oregon. These states have the most documented history of prune drying by artificial means. Idaho's tendency to ship green fruit,

instead of dried, constitutes the main reason for its exclusion from this study. Although Idaho did participate in the growth of the prune industry, it had the smallest contribution of all three states. In fact, the addition of Idaho's dried prune crop rarely appeared in major statistical reports. Data from 1928 to 1935 note Idaho's fresh plum crop averages at 22,840 tons of green fruit, while the state is excluded entirely for the same years of dried prunes.[2]

The geographical bounds selected for this report include what geographers refer to as the Puget Sound Lowland, the Cowlitz Lowland and the Willamette Lowland.[3] The most reasonable northern boundary for the subject of prune driers begins in the San Juan Islands of Washington, located in the Puget Sound, approximately 80 miles northwest of Seattle. The applicable area of study then encompasses southern valleys in both Oregon and Washington and their major cities, including Vancouver, Portland, Newberg, Salem and Grants Pass. The study extends as far south as Grants Pass, Oregon.

The arid climate found to the east of the Cascades is excluded from this study because the region is more successful with irrigated land and inclined to fresh fruit cultivation, instead of cured products. Lands west of the Coast Range are also not as suited to commercial scale operations so they are excluded as well. The geographical scope of this project was largely determined by primary source data indicating the historic presence of a prune industry centered in the protected inner valleys of the Puget-Willamette Lowlands.

Although California was a formidable presence in the prune industry, it too is excluded in this study. The main reason for this decision is latitude. California prune growers relied on the more traditional method of sun-curing in vast drying lots.[4] Due to climatic restrictions, this practice was not reliable in Oregon and Washington; hence, the development of an artificial drying process took place in these areas. Even though California's dried prune industry was dominant, Oregon and Washington managed to secure a niche in the market for themselves and their uniquely dried product.

## Climate Significance

The temperate climate of the Pacific Northwest, due to the insulating properties of the Pacific Ocean, is mild enough to support a variety of agricultural specialties. Particularly suitable to the modified Mediterranean climate were hops and prunes. Under the prevailing west winds, temperatures remain mild year-round, following the general trend of cool, wet winters and dry, cool to warm summers.[5] In 1901, Edward R. Lake of the United States Department of notes:

> The climatic conditions of the Pacific Northwest are such that usually the early autumn rains begin, in one section or another, before the prune crop is more than half harvested, resulting not infrequently in the loss of much fruit by bursting...[6]

The unique geographical components found in the Pacific Northwest presented opportunities for agriculturists to pursue artificial drying techniques to preserve the crop.

Climate was essential to the dried prune industry and enabled growers to market their dried prunes to the world. Climatic disadvantages, especially the threats of early autumn rains, proved to be the necessary ingredient for the advent of artificial heat driers used to cure prunes in the Pacific Northwest.

Latitude also plays into this agricultural drama, as the modified Mediterranean climate patterns dictated by physical geography combined with a forgiving latitude sets the scene for successful and various crop potentials. Although the climate in the Pacific Northwest, it is also a detriment, considering the need for artificial drying structures in the first place. Climate is a major factor in the necessity of artificial heat prune driers in Oregon and Washington.

**Soil Significance**

The main type of soil found in this region is classified as an Ultisol, and generally it is located in between the Cascade and Coast Ranges.[7] These soils are noted for having good drainage and depth; both qualities benefit fruit trees. Climatic conditions, weather patterns, moisture and parent geologic materials located in the Puget-Willamette Lowlands have created the existing soils.[8] Soil depth, horizons, and drainage qualities play an important role in the successful raising of prunes and hops. Grower S.A. Clarke of Candelaria Farms comments on soil necessary for success:

> Fruit growing is becoming a leading industry in the vicinity of Portland in all directions, and in favored districts of Willamette Valley, and is becoming the especial vocation of many in Clarke

> county, Washington, which is appreciated because its soils are naturally drained by a gravelly sub-soil, while the fertility of the surface soil secures the best possible development of tree and fruit. This is the only naturally drained district of any extent. The red hills, near Salem, are being extensively planted to trees and much other land north of that city.[9]

Early prune growers sited their lands in areas that provided suitable conditions for cultivation. Prune orchards in particular required specific soil conditions and the most prolific establishment of the industry occurred in what came to be known as prune districts. Well-drained, fertile soils were the primary reason for successful plum growing in the Pacific Northwest.

**Development of the Prune Industry**

The prune industry began developing after Oregon gained statehood in 1859. As agriculturists began to recognize that the superior geographical features of the Pacific Northwest held capital potential and could provide profit, orchards started appearing along the Puget-Willamette Lowland corridor. Settlers from the eastern United States also brought new types of trees or grafting stock. Although not a state until 1889, Washington's prune industry was also taking root during the 1880s. This growth appeared largely around Vancouver, Washington, and was mirrored by similar advances across the Columbia River in nearby Portland, Oregon. The productivity of prune orchards in Washington and Oregon became apparent by 1901; by then there were 50,000 acres of commercial prunes growing in states of the Pacific Northwest.[10] Development of the prune

industry, however, followed in the steps of the hop industry and evolved only after a considerable amount of architectural cross-pollination. The already existing building form of hop kilns served as a model for newly developing prune driers.

**The Hop Industry as Related to the Dried Prune Industry**

In many ways, the hop industry blazed the trail for the prune industry. Ideal climate conditions of the Puget-Willamette Lowland provided a defined geographic area where both hops and prunes could be successfully raised. The hop crop constantly battled with the climate, so growers turned to architecture as a solution. Although different agricultural products altogether, hops and prunes required desiccation as part of their processing and both flourished in the Puget Sound Willamette Lowland.

Solar drying of hops in the Pacific Northwest proved susceptible to rot or mold infestations, especially when low dew points created constant sources of moisture throughout the day. With copious amounts of hops being harvested, growers turned to artificial heat drying as a method to accelerate curing times, thus ensuring maximum profit return. Hop drying structures, also known as kilns or driers, began to dot the landscape of the Pacific Northwest as early as the 1870s; by the 1890s, a boom in hop growing and drier construction took place in the region.[11]

The building forms of hop driers that appeared in the Pacific Northwest have been attributed to the oast houses of England. The general principle of oast houses included a

kiln room, a drying chamber and an attached cooling room.[12] Pacific Northwest kilns share several similarities with oast houses. Oast houses, as hops are called in Europe, took form originally in Great Britain's agrarian landscapes, accelerating the commercial practice of drying hops.(Fig.1.1)

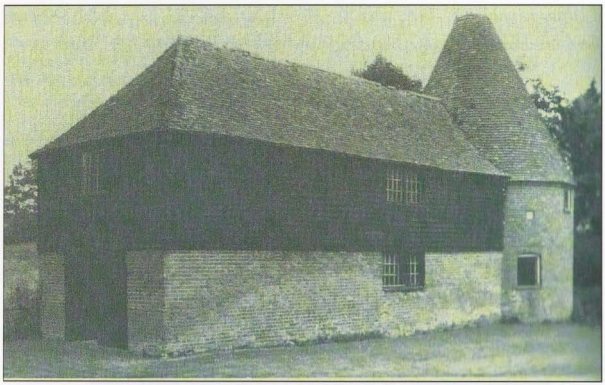


Fig.1.1 Oast house in Kent, England, constructed in 1818. Note the masonry construction and conical roof design.

These multiple story masonry buildings took on a circular form, often with a conical roof used for ventilation.[13] Stoves adjacent to the kiln provided artificial heat and vents around the structure created a draft. A secondary slatted floor allowed the heated air to rise up through the crop, while the conical roof encouraged the hot air, laden with moisture, to escape out of the top.

In the Northwest, the building form of drying structures speaks directly to the function of the kiln. In

general, the overall massing is roughly square, rising one or more stories depending on the intended capacity and size of the hop field. The pyramidal roof is a crucial design component of the structure, as this configuration helps to direct the heated air upward through the crop. (Fig.1.2) The apex of the roof terminates in a ventilating stack. No matter the size of the building, a ventilating feature of some type was crucial to ensure complete desiccation of the crop.

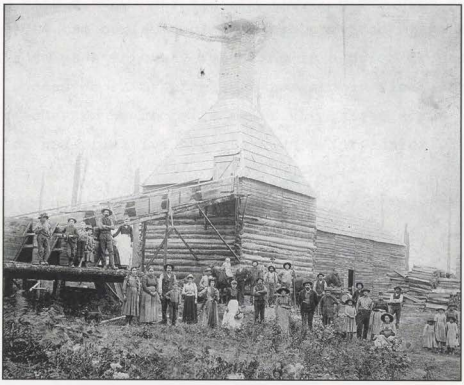


Fig. 1.2 A large and productive Washington hop drier, circa 1893. Note the vernacular construction using notched log construction for the main drier room. Image courtesy of Washington State Libraries Digital Collections.

Massive stoves provided the heat source on the first floor, while smoke escaped away from the heated space through a typical chimney flue. Kilns dependent on an

outside heat source and forced air current created a unique building form that yielded equally impressive cured crops.

Careful management of the stoves proved to be difficult, balancing the danger of fire with the possibility of over-drying the crop inside. Hop growers tended to the stoves, maintaining around 150° Fahrenheit.[14] Without the artificial heat components of the ventilating stack or stove, hop kilns appear little more than barns.

Hop drying kilns were often large structures and outfitted with a secondary slatted floor. Green hops spread evenly across the burlap-covered slats provided space for heated air to pass through, resulting in a dried product. Interior access doors or panels on the second floor were typically accessed by ramps. Some of the larger scale driers also had primitive elevators used for easier loading.(Fig.1.3)

Fig. 1.3 Circa 1889 hop drier in rural Washington, demonstrating plentiful access to timber and usage of ramp and elevator systems to aid in loading. Image courtesy of University of Washington Digital Collections.

Generally, the size of the hop field dictated the size of the dryers used on the property. Often, commercial hop operations consisted of a series of individual buildings that formed a larger complex.(Fig.1.4) Agricultural workers, often Native Americans, tended to the growing crops in the field and assisted with harvesting and processing.[15] This appears to be a unique factor in the growing of hops and not a shared characteristic of the dried prune industry.

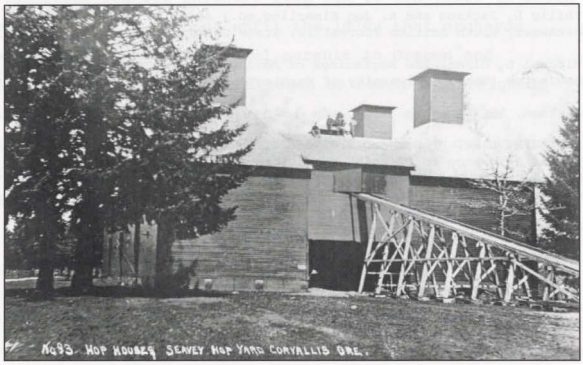



Fig.1.4 The multi-unit complex hop driers at the Seavey Hop Yard in Corvallis, Oregon, circa 1900. Image courtesy of Lane County Historical Museum, Eugene, Oregon.

Eventually prune growers adopted the form of hop kilns precisely because the design allowed for efficient drying, despite climatic conditions of the region. Stagnant, moisture-ridden air inside the dryer produced a less-than-favorable product. Thus, the ventilating stack and stove apparatus became the most salient and important character defining features of kiln driers because these components

directly impacted quality of the dried product. With the introduction of hop kilns to the Puget-Willamette Lowland, these structures became an ideal model for successful prune driers in the Pacific Northwest by the 1890s.

## NOTES

[1] Clarke, 5.

[2] United States Department of Agriculture, *Agricultural Statistics 1936*, (United States Government Printing Office: Washington, 1936) , 155.

[3] Philip L. Jackson and A. Jon Kimerling,ed., *Atlas of the Pacific Northwest*, Ninth Edition (Corvallis: State University Press, 2003) , 5.

[4] Michael L. Olsen, *The Beginnings of Agriculture in Oregon and Washington* (Thesis,University of Washington,1970) , 243.

[5] Jackson, 59.

[6] Edward R. Lake. *Prunes and Prune Culture in Western Europe, With Special Reference to Existing Conditions in the Pacific Northwest* (United States Department of Agriculture, Division of Pomology, Government Printing Office: Washington, 1901) , 6.

[7] Jackson, 90.

[8] Ibid., 88.

[9] S.A. Clarke, *The Prune Industry and Orchard Work Adapted to The Pacific Northwest:Candelaria Fruit Farm, Salem, Oregon* (Portland:Printing Department,1891) ,62-63.

[10] Lake, 5.

[11] Michael A.Tomlin, *Tinged With Gold: Hop Culture in the United States*, (United States:University of Georgia Press, 1992) , 202.

[12] Tomlin, 162.

[13] Tomlin, 159.

[14] Ivan C. Branton. *A Hop Drier for Oregon Farms, Agricultural Experiment Station Bulletin 474.* (Corvallis: Oregon State College,1950) ,2.

[15] Tomlin, 127.

# CHAPTER 2: BUDDING AGRICULTURE INDUSTRY: ARCHITECTURAL IMPACT FOR PACIFIC NORTHWEST ORCHARDS

In the last quarter of the 19th century, the Pacific Northwest began to develop specialized agriculture. Early crops suitable to the temperate climate such as hops and prunes were introduced. Development of the dried prune industry was slightly delayed when compared to hops because plum trees require anywhere from six to ten years to reach bearing age. It was not until the 1870s that orchards became a common agricultural pursuit in Oregon and Washington.[16] Plum orchards began to reach their highest production rates at the turn of the 20th century as different varieties became popular and widely cultivated throughout the plum-growing regions of Oregon and Washington.

## Orchard Specifications

Specific characteristics of the plum orchard itself often depended solely upon the owner. No two farms were identical, and any agriculturist working an orchard as a business had individual and definitive ways to maximize profit. For many farmers, this organization began with the planting of the plum trees themselves. Once plum orchards were planted, it took from six to ten years for them to reach bearing age. Efficient use of acreage, to produce the maximum tonnage of green fruit was ideal in order to turn a profit.

One such successful owner, S.A. Clarke of Candelaria Farm in Salem, Oregon, planted trees in at least three

different patterns to maximize plants per acre.[17] He clearly notes a preference for the Square and Quincunx Systems, both of which aid in cultivation and orchard maintenance. Clarke also notes that:

> It is usual to plant trees in square form, all equidistant, as they can be easier planted and then afterwards cultivated, either directly across, north and south and east and west, or can be gone through diagonally, by which the orchard can be kept clean and the ground level.[18]

The Quincunx System consisted of sets of five trees, four of which were in a square formation surrounded by the centrally located fifth tree. This pattern was repeated throughout the orchard and proved to be another way to efficiently manage limited orchard space.

Clarke was a successful prune grower and pursued his personal interests in the industry not only in the Pacific Northwest, but on the East Coast of the continent. His success was partially due to the persistence of his study and experiments with the prune industry during its early years and as the market expanded globally.

Spatial considerations in the prune industry extended into the landscape and directly impacted functionality of the farm. For instance, plum trees planted on hillsides would tolerate colder weather conditions more so than those planted on flat bottom lands. Microclimates created pockets of land that provided various success rates for different species of plum trees. Agriculturists seeking a profitable business enterprise paid close attention to the layout of their site and its peculiarities, as these factors directly

impacted productivity of their specialized pomological crop.

One of the most important features of any plum orchard was proximity to a good water source. Concerns regarding water were less important for irrigation purposes than for the drying process itself. Orchards were sited, in part, adjacent to a water source that would play a direct role in the curing of plums into prunes. Fresh water was used to rinse the crop as it arrived green from the orchard. Before the fruit could be sent to the drier, it was dipped in a solution of hot lye water, in order to crack or check the tough skin. Without this step, the plums were liable to drip during the desiccation process, reducing sweetness in the final product.

Another equally important aspect of the site of an orchard included the accessibility to a fuel source. In the case of plums and prunes, the driers of the 19th and 20th centuries required wood-burning stoves that were developed in various forms. A single load of plums to be dried could require as much as twenty four hours to completely cure. During this time, the stove was to be continually operated to provide heat and steam necessary to carry out the drying process. Having a fuel source available nearby reduced on the need to procure wood from an outside source, thus saving time and money.

**Scale of Operation**

Prune growing occurred in the form of either subsistence farming or commercial production. The profitability of prune orchards largely depended on scale of operation. In turn, the size of independent driers reflected the scale of cultivated acreage held by an

orchardist. Often, multiple families living on adjacent land would manage their own orchards and combine resources with each other at harvest time. The shared crops would be cured in a communal drier, typically using a small to medium scale drier in a central location. Pooling of resources at the drying site helped to ensure success for all involved. Communal efforts to dry plums cut down on the work load for all involved during the intense months of harvest. Large groups of people worked together during picking time and enjoyed it as an opportunity to socialize.

The other farming operations focused on commercial markets. The scale of these orchards was much larger as was the customer-base. As a successful Oregon prune grower, S.A. Clarke of Salem created a solid niche for himself during the early days of the prune industry. He published a booklet on the trade and offered new growers helpful hints and advice to ensure prosperity.
Clarke emphasizes:

> The intelligent, careful and industrious fruit-grower, who manages well, can succeed in this region and be independent. Prune growing, and fruit growing generally, should pay $100 an acre on the investment, over all actual expense of producing the fruit and preparing it for market. The Prune grower has this advantage, that he is not afraid his product will spoil, as in the case of green fruits. The man who has a good way to evaporate fruit, can save any kind and make it valuable by preparing a good dried product.[19]

Commercial prune driers resembled small-scale structures but tended to be much larger intrusions on the landscape. These operations were often located very near

railroad depots for ease of transportation. With a greater profit margin, commercial driers often trumped local growers economically simply due to higher drying capacities.

As plum growing expanded, especially in response to booming transportation improvements, domestic and commercial markets utilized drying structures as a crucial partner in the industry. The need for drying prunes arose from the high levels of decay apt to occur in green fruit, especially in a moist environment. The delicate flesh of the plum invited rot and insect penetration, often leading to a destruction of the fresh product. Curing the fleshy drupe created a stable, transportable, nutrition-packed food stuff. Improvements in technology such as refrigerated railway cars made it possible to ship fresh produce a long distance, but this had a negative effect on the dried prune industry, as fresh plums were sought out and exported instead of the dried product.

Successful removal of moisture from the fruit enabled the prune industry to thrive and expand both in the United States and Europe. The Pacific Northwest led the kiln-dried prune industry in the United States and the fruit cured in these localities offered unique physical characteristics as a direct result of the artificial drying process. Flavors of individual plums could also be impacted by the type of soil the tree was grown in. Europeans were particularly interested in Italian, Silver and Petite prunes produced in the Puget-Willamette Lowlands;these particular cultivars were noted for their tart, small to medium sized golden-fleshed fruit. Commercial prune growing was lucrative enough it expanded the industry across the globe.

## The Process of Drying Prunes

There are myriad accounts of agricultural journals noting spring conditions while forecasting the actual crop outcome for harvest time. In fact, prunes were often sold on contract before the harvest came in.[20] This practice serves as another indication of the popularity of dried prunes around the turn of the 20th century.

The specific spatial and organizational details of each farm contributed to the overall character and success of the operation. To a large extent, a successful prune drying operation depended on the adaptability and capability of the driermen. This profession required a thorough knowledge of the desiccation process, including skills on how to handle variations in weather that could interfere with the dying process, such as humidity.

At harvest time, plums were gathered and graded according to size. Size differentials were based on how many pounds of dried product could fit into a box or bag. As a scientific-minded grower, S.A. Clarke notes:

> The object to be attained by grading before drying is equality in drying. The smaller fruit dries more rapidly than the larger, and by grading it into two or three sizes, as it comes from the tree, greater uniformity in evaporation is secured, and a more even quality of finished fruit is the result.[21]

Similarly sized plums were cured in separate batches to better ensure uniform drying. In the early days of the industry, grading was done by hand. As technology evolved, various sized grading machines became available on the market and were widely used as a time-saving device.

The final step before drying could commence was dipping the plums into a hot lye bath. This served the purpose of checking the skin of the fruit so the drier could more efficiently desiccate. As the prune industry moved towards standardization, dipping in either hot water or lye solution also became an important concession to cleanliness.[22] This step of processing coincided with the new public awareness of food sanitation during the early 20th century.

**Character-Defining Features of Prune Driers**

After a prune grower sited the orchard and planted it, the process for constructing a prune drier was begun. Proximity to the orchard, access to a water source, plentiful fuel and access to a viable market all went into consideration when determining the placement of a drier. Although siting the drier was a crucial component of a successful prune drying operation, the design and construction quality of each individual structure also played an important role.

In general, prune drying structures took a square or rectilinear form. This design is likely due to ease of construction in an often isolated, rural setting. The height of the structures reached from at least one and half stories to two stories or more, providing adequate draft to remove moisture from the curing fruit. Taking a page from the design of hop driers, the roof often took on a pyramidal form, which aided in forcing spent air up the ventilator shaft and out of the structure. Both forms of

hop and prune driers have a strong and distinct visual impact when viewed in the landscape.

**Natural Draft and Mechanical Draft Driers**

Prune driers relied on air current directed up through the plenum of the building. The plenum is considered the reservoir of heated air space below the slatted floor. The two main types of driers appeared in either a natural or mechanical draft configuration. The main differences in these building forms was the amount of mechanization involved. Natural draft driers appeared first, as they were simple structures relying on a forced draft of artificially heated air.(Fig.2.1) As new technology appeared on the market by the late 19th century, internal mechanical systems were added to driers. These technological advances generally manifested as metal piping systems, flues and tunnels used to directly control the internal air flow. (Fig.2.2)

Not all prune driers were constructed in the exact likeness of hop driers. Some examples took on a gable roof configuration. This type of roof shape dictated the addition of a horizontal ventilating shaft, instead of a vertical form. It appears that larger scale driers tended towards this configuration as means to efficiently circulate heated air in larger structure and process larger amounts of fruit. Construction of larger driers involved more expense, but the results of a higher drying capacity and greater profit was well worth it for some growers.

The early prune driers were constructed of wood, taking advantage of plentiful lumber supplies in the

Pacific Northwest. Grower S.A. Clarke recognized the value of a solidly constructed structure. Upon personal investigation, he discovered another grower operating in southern Oregon, near Grants Pass. Here, owner A.H. Carson perfected a means of drying that minimized drippage from the curing fruit. He engineered his drier so that:

> The air is introduced in tubes from the outside, and these are bedded on the furnaces so that the air is heated rapidly and goes upward with a force that creates a strong current. This heated air passes from the hot air chamber through narrow crevices on either side, and rushes under and over

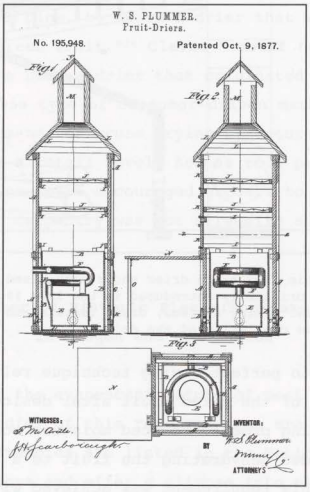



Fig 2.1, The patented 1877 Plummer Fruit Drier shows a cross-section view of the simple, interior components.

each tray of fruit and passes off into space immediately, taking all the evaporation of the fruit away and there is no vapor remaining. The air is not stagnant and dead and loaded with dull vapor, but is a current that operates on each tray and is used no more.[23]

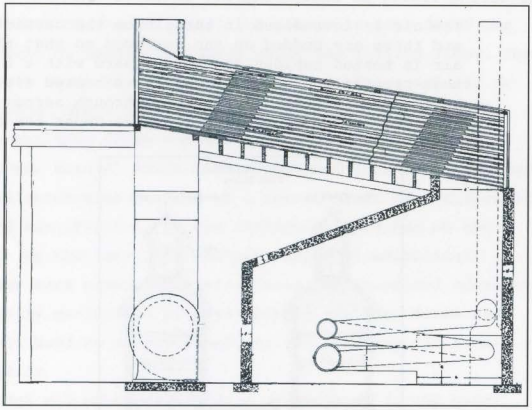


Fig. 2.2, This 1902 prune drier shows mechanized internal components, originally introduced in the late 19th century, included metal piping systems, draft tunnels and flues which increased the complexity of the drier.

Attempts to perfect drying technique related directly to the quality of the cured fruit after desiccation. A successful drying process reduced moisture content of green fruit but avoided dehydrating the fruit to a leathery consistency. This requirement was achieved with the aid of a properly constructed structure. Most prune growers throughout the Pacific Northwest fashioned their driers in

a vernacular manner, using whatever materials and personal expertise they had available. As was true for A.H. Carson and S.A. Clarke, both successful and inventive prune growers, it was not uncommon for prune structures to be remodeled or even rebuilt to achieve a better product during the off-season.

For those growers that perhaps lacked superior carpentry skills, some lumber yards offered a pre-fabricated option. In his prune growing pamphlet, S.A. Clarke notes that, "the Sugar Pine Door and Lumber Company, of Grants Pass, will furnish all the material needed, of kiln dried sugar pine, to build a drier that will hold 5,000 lbs. of green fruit."[24] Clarke himself notes that for several years he used a drier that originated in Vancouver.[25] This type of consumer-driven market indicates enough pubic demand for prune drying structures that they were offered on a retail level. Access to a pre-fabricated lumber package no doubt encouraged growers to pursue prune drying, even if carpentry was not a readily available talent.

## National Register of Historic Places:Nominated Prune Driers in Oregon and Washington

Because of the evanescent nature of most prune driers, less than a handful of this resource type are extant today. Three notable examples are listed in the National Register of Historic Places and offer a glimpse into the varied typology of late 19th and early 20th century prune drying structures.

The Arndt Prune drier, constructed circa 1898 in Clark County, Washington, is one such example. Although this building does not follow the model of a hop drier, the function and design of the building answer to the requirements of a successful prune drying operation. Another notable example is the circa 1921 prune drier located on the Davis Farm in Clackamas County, Oregon. This structure also features a gable roof configuration, but in its modern state lacks any ventilation stack. The third nominated property is the Parrish Farmstead, located in the vicinity of Newberg, Oregon. The circa 1905 prune drier features two stories, enabling the use of tunnels to circulate hot air. These three nationally recognized structures exemplify the diversity of prune drier designs and are all found in historically heavy prune-producing areas.

**The Arndt Prune Drier, Clark County, Washington:**

Nominated to the National Register of Historic Places in 1979,[26] the Arndt Prune Drier remains the only extant, operational prune drier in Clark County, Washington.(Fig. 2.3) The natural draft drier was constructed circa 1898 by German immigrant Fred Arndt in the rolling farmlands of southwestern Washington. This particular prune drier is a one-story structure built on the northwest slope of a hill, adjacent to a small plum orchard.

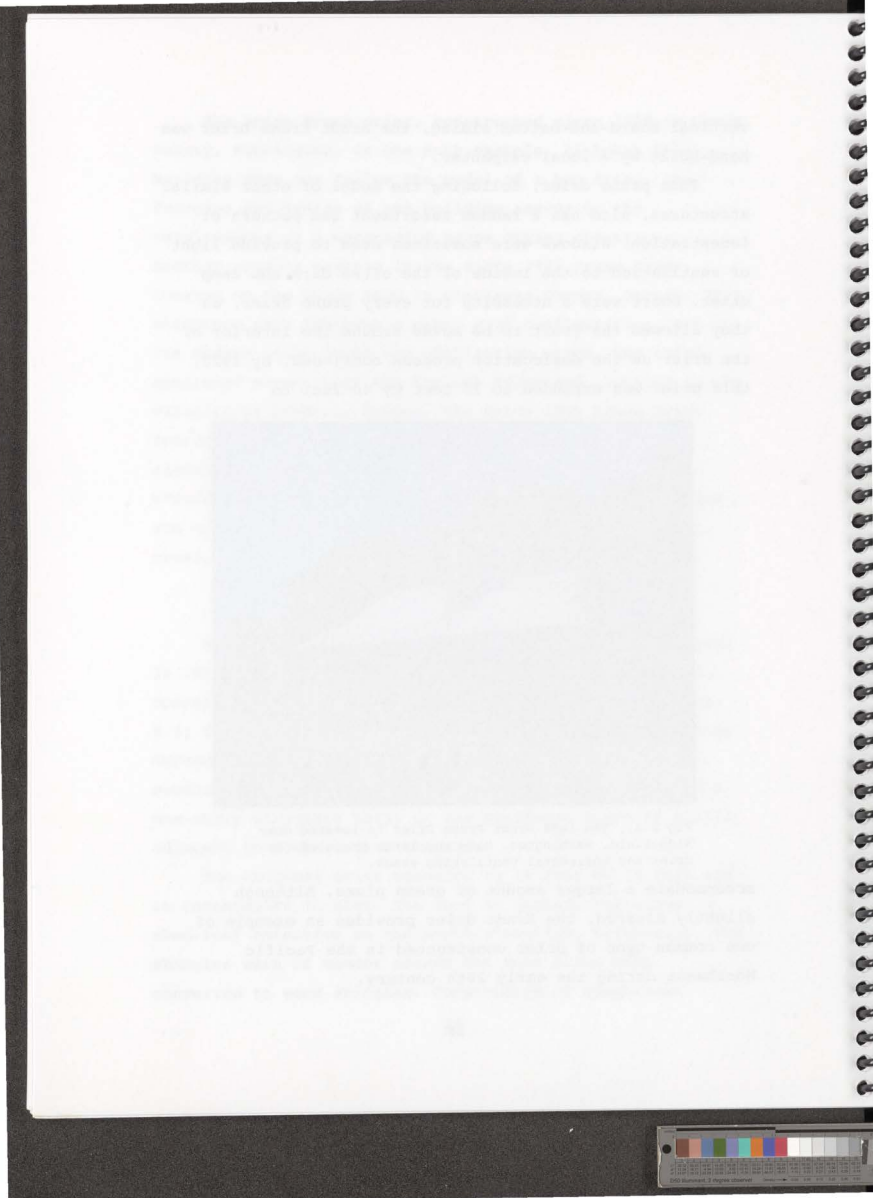
The original drier measures to 14 feet by 15 feet and is rectangular in plan. The roof is gabled, featuring a shed-roof extension on the north elevation. Originally, the shingles were of wooden shakes but have since been converted to wood shingles. Constructed of rough-sawn

vertical board-and-batten siding, the Arndt Prune Drier was hand-built by a local carpenter.

This prune drier, following the model of other similar structures, also has a random assortment and pattern of fenestration. Windows were sometimes used to provide light or ventilation to the inside of the often dark and damp drier. Doors were a necessity for every prune drier, as they allowed the fruit to be moved around the interior of the drier as the desiccation process continued. By 1920, this drier was expanded to 20 feet by 40 feet to

Fig 2.3., The 1898 Arndt Prune Drier is located near Ridgefield, Washington. Note the large scale of the drier and horizontal ventilating stack.

accommodate a larger amount of green plums. Although slightly altered, the Arndt drier provides an example of one common type of drier constructed in the Pacific Northwest during the early 20th century.



**The John and Magdalena Davis Farm Prune Drier, Clackamas County, Oregon:**

The Davis Prune Drier, constructed circa 1921, stands as the only extant drying structure known in Clackamas County, Oregon[27]. The two-story drier is situated on a hillside, with a basement level as the location for the furnace.(Fig. 2.4) Although the north and south gabled ends of the low-pitched gable roof are a character-defining feature of this structure, the prune drier lacks a ventilator or flue of any sort. Modern composition shingles clad the roof. Fenestration of the building appears in a random configuration on every elevation.

Despite documentation as a prune drier, it remains unclear how the structure functioned properly without a ventilating device. The nomination makes no mention of such a design feature ever existing, making this a less than ideal example of a prune drier. Perhaps like many other extant driers, alterations have perhaps diminished physical evidence, although historic documentation still remains. Because the Davis Farmstead has been designated a "Century Farm," significant for 100 years of continuous ownership within the Davis family, historic records reinforce the historic use of the prune drier.

Although lacking details in the architectural description, the Davis prune drier strongly exemplifies social tendencies of prune cultivation in the early 19th century. This particular structure was shared by four adjoining farms, all of which cultivated plum orchards and shared the drier to cure prunes in the autumn.

**The Parrish Farmstead Prune Drier, Yamhill County, Oregon:**

The circa 1912 two-story prune drier was constructed on the Parrish Farm as a staple of the family's agricultural pursuits.(Fig.2.5) Newberg, Oregon, was a hot-spot for growth and development of the prune industry in the early 20th century. The 1912 Parrish prune drier serves as an example that utilized furnaces and vents on the first floor, which allowed heat to rise up to the fruit on the second level.[28] This wood frame prune drier is rectangular in form and measures to 65 feet by 80 feet. It has a gabled roof and includes an open shed-roof addition to aid in movement of the fruit.

The physical description noted in the National Register Nomination form makes no mention of a ventilator stack, so it remains unclear how the heated air escaped the building. It is possible that this structure relied entirely on windows or vents to force the heated air outside. Like other extant prune driers, alterations in the form of corrugated metal roofs have occurred since the original construction date. Few prune driers are extant today, but several have been listed on the National Register of Historic Places, indicating their importance in history, even if for a small amount of time.

**Documented Prune Driers in Oregon and Washington**

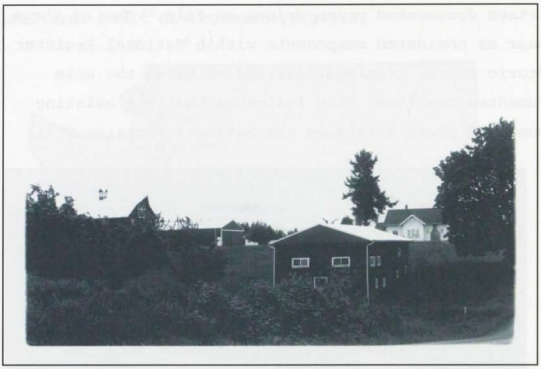


Fig.2.4, The 1921 Davis Prune Drier (foreground) appears in the landscape in an atypical form. The gabled roof currently lacks any indication of a draft system.

General awareness of extant prune driers is limited, but not for lack of documented sources. Both Oregon's State Historic Preservation Office and Washington's Department of Archaeology and Historic Preservation have compiled lists of known prune driers. For both of these states, documentation ranges from meager descriptions to more detailed information often inclusive of photographs. Although both states have made efforts to note all known prune drying resources, it is inevitable that the list is incomplete. This is partially due to surveyor error, especially regarding prune driers that have been altered beyond recognition. Meager numbers of extant driers are reflected in the statewide inventories for both Oregon and Washington.

The Oregon State Historic Preservation Office has thirteen documented prune driers on file.[29] Two of these appear as nominated components within National Register of Historic Places listings, instead of being the sole documented resource. This indicates that the existing documented prune driers on the National Register still

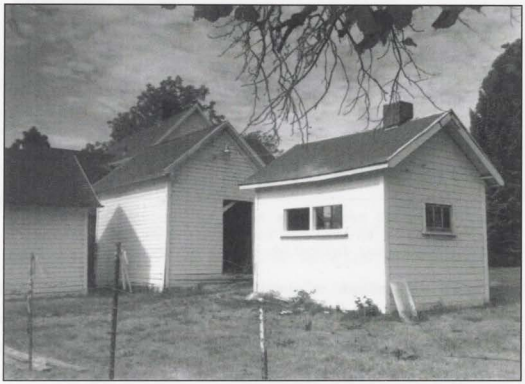


Fig.2.5, The circa 1912 Parrish Farmstead Prune Drier, located in the center of the photograph, has been altered and bears no evidence of a ventilating stack.

retain their historic integrity, even if they are not individually significant in the National Register of Historic Places. The majority of documented driers, according to the Oregon State Historic Preservation Office in Salem, are located in areas historically associated with the dried prune industry. These resources are concentrated in areas adjacent to Portland, particularly in Newberg and Salem. The scant number of existing resources in Oregon

reflects the dwindling presence of prune driers in the agricultural built environment.(Fig.2.6)


Fig. 2.6 Scatter plot map of all extant driers and driers historically known to exist. Map compile by author.

Washington's Department of Archaeology and Historic Preservation also have tallied the remaining known prune driers in a statewide inventory.[30] Washington resource counts for prune driers total at five, one of which is

located on the National Register of Historic Places. The aforementioned Arndt Prune Drier of Ridgefield, Washington, remains as the only functional example of a prune drier. The remaining four documented prune driers in Washington are also clustered just north of Portland. These structures are concentrated in the areas adjacent to Vancouver, Washington, and also reflect the height of the dried prune industry.

To summarize, the building form of prune driers was largely influenced by hop kilns, because both structures depended on artificial heat for curing. Orchard layout related directly to amount of product to be cured, which determined the size and particular features of each individual drier. Although there are only a handful of extant documented prune driers, those that do remain portray only a fraction of the building stock that existed during the height of the industry in the early 20th century. With under twenty known resources in both Washington and Oregon, it is accurate to conclude that prune driers are an exceptionally scarce and endangered building type in the Pacific Northwest.

## NOTES

[16] Michael L. Olsen. *The Beginnings of Agriculture in Oregon and Washington*, (Thesis, University of Washington, 1970) ,242.

[17] S.A. Clarke, *The Prune Industry and Orchard Work Adapted to The Pacific Northwest. Candelaria Fruit Farm, Salem, Oregon.* (Portland:Printing Department, 1891) , 24.

[18] Ibid., 22.

[19] Clarke, 62.

[20] Ernest H. Wiegand. *Drying Prunes in Oregon:Oregon Agricultural College Experiment Station Bulletin 205*, (Corvallis:Oregon Agricultural College, 1924) , 24.

[21] Clarke, 58.

[22] Wiegand, 22.

[23] Clarke, 75.

[24] Ibid.

[25] Ibid., 74.

[26] Shirley L.Courtois, *National Register of Historic Places Inventory Nomination Form.* (United States:National Park Service,Department of the Interior), 1979.

[27] Bette Davis Nelson, *National Register of Historic Places Inventory Nomination Form* (United States: National Park Service,Department of the Interior), 2005.

[28] Ronald William Parrish, *National Register of Historic Places Inventory Nomination Form* (United States: National Park Service, Department of the Interior), 1999.

[29] Oregon State Historic Preservation Office, Oregon Parks and Recreation Department. *Historic Resources Survey and Inventory Database.* Online Source: www.oregon.gov. Site accessed March 2012. Page last updated October 2011.

[30] Washington Department of Archaeology and Historic Preservation. Washington Information System for Architectural and Archaeological Records Data. Online Source: www.dahp.wa.gov. Accessed March 2012. Page last updated 2012.

# Chapter 3: Clark Prune Drier: A Case Study on Orcas Island, Washington

During the author's internship in 2010, a visit to the Clark Prune Drier resulted in measured drawings, photographs and general field notes. Although severely deteriorated, this prune drier reflects the agricultural boom of the late 19th century and the downfall of the dried prune industry by the 1920s. The San Juan Islands of northwestern Washington provided ideal conditions for a dried prune industry in the early 20th century. In particular, Orcas Island duplicated developments of the mainland dried prune craze. Evidence of the prune industry on Orcas Island appears in the rare, extant example of a 1900 prune drier on West Sound. The isolated nature of Orcas Island created a niche within the overall local agricultural trends. The Clark Prune Drier, although little more than above ground archaeology, is a reminder of the once booming dried prune industry of the Pacific Northwest.

A necessary responsibility of preservation work is to better understand historic processes and resulting building forms that have not yet been fully recognized. Field measurements taken by the author in 2010 along with an historic circa 1900 photograph allow the drier to be studied and analyzed. (Fig.3.1)

Reconstruction of the drier based on existing data aids in interpretation of the original structural specifications and how the entire site functioned as a profitable venture. The estimated 112 year old drier is currently in a near ruinous state, with approximately 50

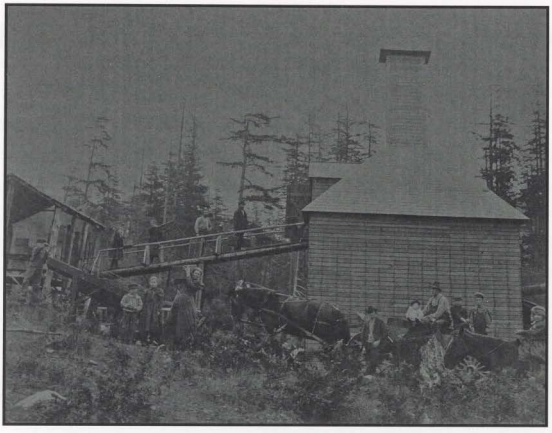


Fig.3.1. This circa 1900 photograph of the Clark Prune Drier illustrates early appearance of the structure and how the adjacent landscape served the greater operation of prune drying.

per cent of interior and exterior components seriously deteriorated or non-existent. (Fig.3.2)

Situated on Orcas Island, nestled amongst other islands making up the San Juans of Washington State, the property owner of the historic Clark Prune Drier wishes the exact location of the site to remain anonymous. Suffice it to say, the drier itself is quite near the waters of Puget Sound, yet remains sheltered from direct view of either road or waterway. Access to the drying site and orchard is achieved by way of a winding, slightly elevated gravel road. A small knoll runs along the west elevation of the drier. Historically, this feature aided in the loading and unloading of prunes from the top drying chamber. The east elevation terminates at a lower grade in a somewhat marshy

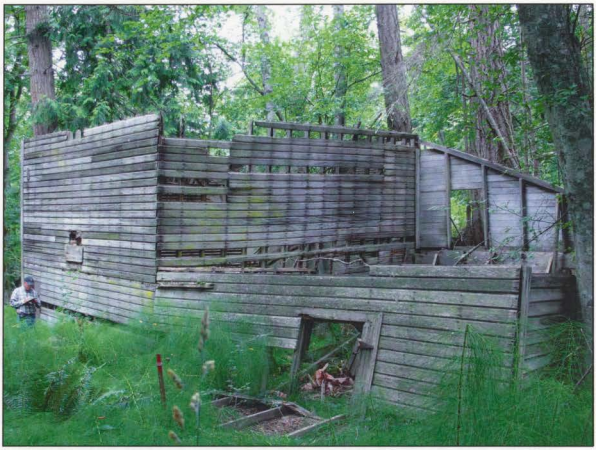


Fig.3.2 The Clark Prune Drier as photographed in 2010. Approximately 50 per cent of the drier is estimated to be lost or dislocated, including interior components and the roof. Photography by author.

area created by a natural fresh water spring. This component of the site provided a water source used during processing.

The high water table near the east elevation currently provides conditions ideal for the proliferous growth of horsetail both inside and around the drier. Although the drier is isolated and on private property, the current owner claims that vandals continue to pilfer building materials, further diminishing the structure.

The old orchard is located approximately 75 feet northwest of the drier. Most of the approximately 50 plum trees, of an unknown variety, are in poor condition. In general, the trees are planted five to eight paces apart, in a regular grid pattern. The ground of the orchard has

been planted with grass and is surrounded by a forest filled with mature spruce, fir and madrone trees.

## Physical Description

As of the summer of 2010, the Clark Prune Drier retained approximately 50 percent of its original materials in their proper places. The condition of the drier may be considered by some to be little more than above ground archaeology, but field notes and documentation offer sharper details of the historic structure and its function.

Although the drier is a single structure, it is best described by breaking the building into two larger components. The drying room on the south side is the larger part of the structure, while the attached secondary processing room on the north end of the building is a smaller space due to its roof configuration. The drying room is identified as such because of the plastered interior, and evidence of slats and because of information gleaned from the historic photograph indicating a ventilating stack. The processing room is considered as such because of the crawlspace underneath and the screen windows necessary to let in light and ventilation while preventing insect infiltration.

The drying room measures 19 feet on the south elevation by 19 feet and 6 inches on the east and west elevations. The structure is located directly on the soil, with no other indication of a specific foundation type except for the 2 by 4 sill. The true 2 foot by 4 foot stud wall construction rises vertically 13 feet. Deterioration at the top of the structure indicates that the actual

height might have been greater before the roof collapsed. The one and a half story structure is clad in unpainted horizontal shiplap wood siding. There are corner boards at every exterior wall junction. As the drying room was designed to maintain heat, there are only three small openings in the structure.

Foot access at the lower ground level is from an opening on the east facade. Although there was certainly a operational door in this opening while the drier was in use, there is not one currently. The only visible evidence of this are two iron strap hinges nailed to the side of the opening. The second opening on the east elevation drying room is a small 22 inch wide brick-lined cavity. As is evidenced in the historic circa 1900 photograph, a stove pipe extended from the interior of the drier to the exterior. The sole masonry components of the structure, located here, were intended as a fire preventative, as the stove pipe could reach high temperatures and ignite adjacent wood during operation of the drier.

The third opening on the east facade is directly below the brick-lined cavity. This ground level opening spans 3 feet 6 inches and is 2 feet, 4 inches in height. It is possible that this opening functioned alongside the stove as a fresh air intake at the beginning of the artificial heating process.

The west elevation of the drying room does not provide ground level access. Instead, access to the structure is provided in a 4 foot wide door situated above the plate. A wooden ramp from the door to the ground below provided a convenient access for bringing in the green fruit and removing the dried product. This upper level door was

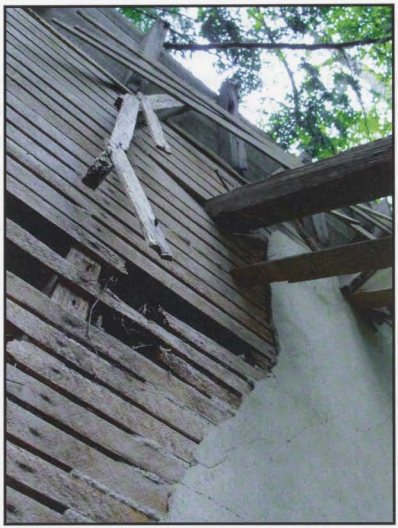


Fig. 3.3 For insulation purposes, lath and plaster covered the interior of the drying room from the ground to the bottom of the plate. Photograph by author.

sheltered by a gabled dormer that extended from the pyramidal roof. Although the dimensions and exact configuration of the gabled dormer are unclear, approximate size can be determined from the historic photograph and field measurements of the extant opening on the west facade.

The most prominent feature of the historic drier, the pyramidal roof, is a crucial character-defining feature that is now lost. In fact, there is no physical evidence of

the roof remaining on the floor of the drier, where it likely collapsed some time ago. The roof was probably clad in wooden shakes. The pyramidal roof form, capped with a vertical ventilating shaft, rose nearly as high as the drying room itself, according to the historic photograph. This design feature provided air circulation by creating a draft that pulled hot air up and out of the flue. The central ventilating stack terminated in a pyramidal cap that further directed spent air out of the structure. The natural draft principle of the Clark Prune Drier was an important design feature that controlled air flow and thus quality of the dried prune.

The interior features of the drying chamber, although in various stages of deterioration, reveal the design and function of the prune drier. One and a half inch wood lath is attached to all studs below the plate and walls are covered with plaster, likely formed using local lime.(Fig. 3.3)

The interior, lower portion of the drying floor extends to a height of a 13 feet, capped with a 2 by 8 inch wood plate that runs around the interior top perimeter. Approximately two feet of studs extend past the plate, providing a juncture point between the roof and drying chamber. Notches in the plate bear physical evidence indicating floor joists that spanned from east to west. These joists carried a slatted floor system that ran from north to south in the upper drying chamber. Space between the slats was crucial in admitting artificially heated air through the fruit. Although none of the floor system remains entirely intact, some evidence does appear on the ground of the drier. Dislocated joists are lined with what

appear to be cut finishing nails arranged an inch apart, extending the length of the piece.

The processing area, located on the north end, was constructed with an open floor plan similar to the original drying chamber. This portion of the drier is 19 feet 4 inches by 19 feet and a quarter inch, mirroring dimensions of the main building. This section of the drier reflects the evolution of the building, both during operation and deterioration.

Although the floor measurements are similar to those of the drying room, this portion of the building served a different purpose and therefore had different interior and exterior components. The foundation sill also rested directly on the ground. Stud wall construction identical to that found in the drying room extended to a maximum height of 13 feet. The shed roof of this building is evidenced by the downward sloping east and west walls. Although this part of the drier has been heavily damaged, large pieces remain in some form, offering clues to original layout and function.

The north end of the drier was adjacent to, but entirely independent from the drying room itself. The drying chamber and processing room share a common wall, but there is no indication that access between the two spaces existed from inside the drier. Instead, access to the processing room on the east elevation was through a squat door measuring 40 inches by 44 inches. A screened opening measuring 24 inches by 22 inches on the west side likely served as ventilation.

The drier itself is being reclaimed by nature, as large trees now grow directly around the west perimeter of

the structure. Water-tolerant plant growth such as horsetail have overtaken the drier floor, indicating a near constant source of moisture. This could have serious implications for the remaining structure, as decay is accelerated in moist conditions. Shade provided by adjacent large trees also encourages moisture to accumulate on the already-fragile remains of the drier, further promoting deterioration. It is likely that a strong wind storm could cause the trees to fall, completely destroying the drier remnants. Many of the internal components are covered with robust colonies of moss, lichens and algae, indicating moisture as a prominent source of deterioration.(Fig.3.4)

Fig.3.4 Nature has reclaimed the drier, especially failed interior components which have heavy moss accumulation. Photograph by author.

It is unclear how long this structure has been in distress, but evidence at the drier site suggests a failed

roof system as the initial cause of deterioration. There are no remaining components of the roof, while most of the walls are still intact. Interior components such as joists and the slatted drying floor are also heavily damaged or non-existent, indicating these horizontal portions of the structure fell prey to moisture infiltration and decay only after failure of the protective roof.

While the remaining components of the structure hint at the building's former glory, periodicals from the era provide a vivid, social image of the dried prune industry of the San Juan Islands. The *San Juan Islander*, a newspaper serving all of the San Juan Islands, was published from 1898 to 1914. Dates of publication coincide with the height of the dried prune industry and offer a first-hand look into the relevant comments of those involved.

Specific information for each island was compiled into sub-headings that detailed articles from each particular location. In October of 1902, an entry from Orcas Island's West Sound noted that:

> W.O. Clark started up his reconstructed fruit drier Saturday night, loading the trays with 3,000 pounds of prunes. He says the drier is working finely and does its work more rapidly than expected.[31]

As is explained in this article, the prune drier had been recently reconstructed, which corresponds to the fact that many growers rebuilt their driers in the off-season. It is also interesting to consider that 3,000 pounds of green fruit could fit in one load. Maximum usage of interior space, without over-crowding, yielded the most profit. Other reports are a testament to the profitability of

driers, as other people across the Islands also put up driers. In May of 1901, an article notes, "Assessor Buxton is going to put up an evaporator this year."[32] A month later, an article notes, "M.J. Reddig began work on Assessor Buxton's new fruit drier Monday."[33] These articles indicate the general popularity of prune driers on Orcas Island. Not only were people interested in owning them, but some profited as skilled carpenters building them for others.

As with other agricultural periodicals of the times, the *San Juan Islander* often ran articles describing the general condition of the dried prune industry for any given season. In 1904 it was noted, "prune market in bad shape."[34] Along with snippets of information related to the status of the crop, there were also generalized requests for new driers to be constructed.[35] In the early years of the dried prune boom, shortage of drying structures led to surplus harvests of plums which were ultimately wasted. Also, articles in the *San Juan Islander* also indicated some years inclined to over-production of dried prunes. In June of 1901, an article reads, "We will not need any more evaporators this year."[36] It is clear that the rates of fruit production and drier construction had a delicate balancing point in the earliest days of the industry. Nonetheless, prune driers in the San Juan Islands were a popular and profitable endeavor for many citizens.

In conclusion, the dried prune craze hit the San Juan Islands just as hard as it did in mainland Washington and Oregon. As a rare extant example, the Clark Prune Drier of Orcas Island exemplifies the unique building type that evolved in response to the boom of the dried prune

industry. Although it loses more historic fabric every year, the Clark Prune Drier stands as a reminder of the now obsolete dried prune industry. Fortunately for scholars and historians, digitized newspaper articles shed light on otherwise irretrievable social aspects of the times.

## NOTES

[31] West Sound, *San Juan Islander*. October 2, 1902. Chronicling America: Library of Congress. Page 5.

[32] East Sound. *San Juan Islander*. May 23, 1901. Chronicling America. Library of Congress. Page 2.

[33] Ibid., June 20, 1901. Page 2.

[34] Ibid., January 28, 1904.Page 1.

[35] Ibid., January 22, 1903. Page 2.

[36] Ibid., June 16, 1901. Page 1.

# Chapter 4: Plum Crazy: Growth of an Industry, 1880s-1920s

By the mid to late 1880s, the dried plum industry began to attract a substantial and growing consumer public in the Pacific Northwest. Firmly established, productive orchards of Washington and Oregon fueled consumer demand, and popularity of dried prunes increased outside of the Pacific Northwest. Transportation improvements encouraged the movement of goods. New marketing techniques appeared and influenced consumer buying habits. The advancement of communication in general enabled transportation and consumer advertising. The nexus of transportation and marketing created both a financial dynamic and cultural explosion of prune "pride," which blossomed in the orchards, markets and tables of the late 19th century.

## Transportation

The restless last two decades of the 19th century produced new and demanding forces of industry and technology. Prior to the 1880s, movement of goods and people took more time and industries remained undeveloped or underdeveloped because of delays. Inefficient transcontinental transport routes and scant numbers of prospective buyers did little to nourish the neophyte industry. As transportation improved and subsequent industrial vision clarified, especially around the turn of the 19th century, new marketing methods resulted from expedient transmission of goods via rail. Transportation linkages created marketing connections from small towns to

large cities, while industries provided opportunities for social exchange. As the dried prune industry swept the nation, cultural diffusion spread eastward from the Pacific Northwest as consumers demanded the dried fruit product.

Before the advent of practical rail transportation, water thoroughfares served as the main method of dispersal. This was particularly true for dried prunes originating in the San Juan Islands. As with other commodities produced in the Islands, exported goods benefitted from convenient, albeit non-optional, water transport.

Exports were shipped out of Portland, to many other places in the world. The two major districts of prune orchards, located around Vancouver, Washington and near Portland, Oregon, also benefitted from nearby water routes used to facilitate transportation of goods nationally and globally.

By the late 1880s, transcontinental railroads established travel routes and freight trains observed structured schedules with service from Portland to eastern markets such as Chicago, New York or the Twin Cities.[37] Railroads not only provided an east-west connection, but also extended north-south within the Puget Sound Willamette Lowland region, thus encouraging agricultural expansion both within and adjacent to the valleys. Smaller growers were eventually able to band together as cooperatives and benefit from accessible rail transportation.

Advances in rail technology quickly overtook traditional water transportation and:

> because of this, Columbia River and Puget Sound Ports enjoyed a virtual monopoly on goods shipped to and from the area. Overland connections by railroad with other parts of the United States tended to

destroy this monopoly and resulted in changes of both the type and volume of commodities moving through the Ports.[38]

Although railroad transportation certainly spurred agricultural growth in the Pacific Northwest, not all traditional, water-based transportation became obsolete. Dried prunes from Oregon and Washington also found a reliable export market in northwestern Europe. This required a long oceanic journey; mileage from Portland to London was shortened by at least 6,500 miles after the completion of the Panama Canal in 1914.[39] Prunes bound for foreign markets continued to expand from advances in global transportation, while domestic markets of the United States benefitted from the speed of transcontinental rail.

Technological advances in the rail system of the continental United States were not limited to efficiency. The dried prune market also felt some pressure from the introduction of refrigerated railroad cars. This improvement offered the possibility of shipping plums to distant markets, making dried prunes more or less obsolete. In 1901, the United States Department of Agriculture produced a report stating, "in America the recent rapid improvement in fruit refrigeration has worked harm to the dried fruit industry in that it makes it possible to materially lengthen the season during which fresh fruits of many kinds may be marketed."[40] Fortunately for the industry, the demands for dried prunes continued in the United States and abroad; thus refrigerated railroad car technology only marginally impacted the industry.

On land, one of the most marked differences in the American prune industry became the rapidly increasing

amounts of cured product that became available for rail shipment in the autumn. Prune grower S.A. Clarke of Salem noted that, "we need not doubt that there will be a demand as fast as we can furnish a supply."[41] After the railroad systems linked the Pacific Northwest to the interior United States, prune counts at harvest time required an updated, modern measuring system.

Instead of the traditional measurements of prunes per box, massive loads of prunes began to be recorded simply as *carloads* of prunes. Popular agricultural literature, such as the *Oregon Agriculturist and Rural Northwest* journal, published facts about yearly harvest counts beginning in 1890. For the 1901 harvest, for example, Umpqua Ferry orchards reported two carloads, while Myrtle Creek, Oregon, used the previous measuring system to report 67,500 pounds of cured product.[42] The statistics of the prune industry during its various stages of growth show the built environment operating in the background. Behind every carload of dried prunes was a drier that cured the fruit from local orchards and readied the crop for sale. Success of each particular drier played a large determining factor in the marketability of the prune in distant marketplaces.

## Industry Statistics

In 1929, statistics on Oregon and Washington's dried prune industry indicated the successful transportation advancements in only two decades. Geography plays another distinct role in the advancing industry when the Eastern fruit markets of the United States successfully opened their stalls and taste buds to dried prunes.

In 1927, the United States Department of Agriculture commissioned a report, *Department Circular 416*, to evaluate the Oregon and Washington prune market demographics. Part of the study aimed to determine major ethnicities of prune purchasers in Eastern fruit markets, thus charting their preferences in prune flavor. The study also provides insight into social and economic demands for dried prunes both domestically and abroad.

Strongest demand for Oregon and Washington dried prunes was observed to be in major eastern American cities with highly concentrated numbers of ethnic populations originating from northern Europe. These countries included the United Kingdom, Germany, France, Netherlands and Belgium, as well as the Scandinavian countries.[43] The report concludes that the tart Italian prune is more reminiscent of their customary native prune. Thus, northern Europeans tended to prefer the Oregon and Washington drupes as opposed to California prunes because they were generally sweeter.[44] Prune buyers paid particular attention to the taste and general appearance of the prune at market. Sugar content of dried prunes directly resulted from the curing method and to a large degree resulted in overall attractiveness of the product as displayed at market.

Interestingly enough, by the turn of the 20th century, a wide range of economic classes in the United States purchased prunes as a regular grocery item. The Department of Agriculture claimed that, "Medium and high income groups use prunes because they like them and because they are healthful...the moderately well-to-do and the wealthier classes are actually eating more prunes per family than are the poorer classes."[45] It is interesting to note that

considerately large enclaves of European immigrants made up the majority of urban prune buyers. The availability of prunes acted as a reminder of their native food ways, of which prunes had been a part for generations. Oregon and Washington dried prunes were readily available to all people in America, and they were purchased by those of varying economic and cultural backgrounds.

## Marketing

The nexus between product quality and consumer demand developed as marketing techniques appeared and encouraged a thriving new pomological culture. Some people involved in the early days of the industry were excited about the profit potential of Oregon and Washington prunes. One enthusiast proclaimed, "with the improvement sure to occur in commerce and transportation, Oregon and Washington will ship millions worth of choice fruits to the markets of the world, and the introduction of these products abroad will show the world their superior quality as to texture and character and will insure a demand that will create a liable market."[46] Growers interested in increasing public awareness of dried prunes made extensive attempts to make their product stand out in the marketplace. With a lack of standardization in the industry, it did not take long before problems with new marketing ploys plagued the dried prune market. Common trouble areas within the industry materialized in the sectors of packaging, labeling, branding and advertising.

In line with the old adage, "If you want to do it right, do it yourself," prune grower S.A. Clarke of Salem

took the advice to heart. He traveled from Oregon to the eastern markets during the winter of 1892 to 1893:

> the writer went to Chicago and New York and submitted fairly good samples of Oregon Pr[nn]es to great merchants who do the business of this continent. This was written up in correspondence with the Oregonian from New York and Chicago at the time, and fully proved that our fruits possess superior quality and excellence that enables our region to compete successfully in the world's markets in production of deciduous fruits, and especially in regard to the Prune.[47]

Technologically and culturally, this was an impressive field trip for Clarke. Not only did he travel by rail, but he networked and contracted with potential prune buyers on the East Coast. While the dried fruit crop made its way east via rail, so did increasing numbers of people and their ideas. By journeying for a first-hand account of the prune market, Clarke was able to piece together the larger puzzle of the developing industry and its newly-discovered flaws. In doing this, he was able to pinpoint specific trouble areas and their respective solutions in the fledgling industry. Being of scientific mind, Clarke essentially set about troubleshooting problems of the industry based on personal inquiries concerning his own harvest and financial security.

A 1901 article in an agricultural journal printed several years after Clarke's journey stated that, "Quite a number of prune-growers are going East to sell their crop."[48] Many growers found that shipments of prunes were either ruined or damaged en route to markets, so they traveled to personally inspect the situation, much in the manner Clarke had done a few years earlier. In order to

streamline the process of selling, many growers sought out individual contracts and buyers for their dried prunes. Improvements in transportation continued growing stronger, and, as they did, the prune industry evolved.

Since the beginning days of Oregon and Washington's dried prune industry during the early 1880s, meagre marketing attempts caused strife for some growers. Lack of industry-wide standards created far too many issues with quality control in carloads of dried prunes. Some of these inferior prunes reached eastern markets in the early days and damaged the reputation of the industry. Soon enough, the expanding prune industry turned to standardization as a response to the demanding, competitive industry of dried fruit.

**Packaging**

Having great personal interest in industry, S.A. Clarke noticed, along with many other agriculturists, the deficiencies in attractive prune packaging. He states that,

> The final operation in the handling of the prune is packing, and here again great judgement is required in putting up a thoroughly good article, that will present an attractive appearance and force its way on the market. Great care must be exercised...[49]

Marketing for prunes truly began in the orchard and drier, but the process continued during packaging and shipping. Desiccated prunes were still susceptible to decay if not treated properly out of the drier. Too much moisture remaining in the sugary flesh of the drupe could mold, attract insect infestation or induce fermentation during shipment[50]. Throughout the height of the prune industry,

packaging in particular became a primary concern noted by all involved in the trade. Analysts of the prune industry asserted "that the market for the evaporated prune will steadily increase if it can be supplied with a high quality of fruit, neatly and cleanly packed, which can be sold for a reasonable price."[51] Repeatedly, lack of standards for packaging resulted in shoddy products and consumer uncertainty in the Pacific Northwest's contribution of dried prunes.[52] In fact, the most conspicuous deficiency within the dried prune industry related not to production of prunes itself, but rather to how the product was distributed and displayed to consumers.

During the initial days of the industry, prunes were graded according to size and boxed appropriately by size classification. Wooden crates littered the drying sites and generally, twenty or thirty pounds of prunes to a box was considered an average weight. In an early attempt to beautify the dried product in shipping crates, packers hand-placed or *faced* the first two layers of fruit on the bottom of the box. The remainder of the box was filled with prunes, haphazardly dumped on top. This way, when the box was opened at market to reveal the bottom layers, the display was tidy and attractive.

It is no surprise that "the most neglected phase of the prune industry is that of packing and packages."[53] Although some individuals attempted to solve the packaging dilemma, most growers were content to quickly box or bag their product and let retailers decide about display tactics. For some of the more particular growers, this method was far too sloppy when applied to the crop they had

so carefully tended. When S.A. Clarke traveled to the Middle West during the winter of 1892-93, he noticed that,

> Different packing houses in Chicago and New York do not agree as to packing Prunes. The leading dried fruit brokers in New York say pack the best ones in 25-pound boxes and the rest in cotton sacks holding 100 pounds, but some Chicago houses like all to be in sacks and repack as they please to suit their trade.[54]

Perhaps this realization partially indicates why growers never took much care in the first place. After all, most prune growers involved in the early industry were focused on starting successful orchards, not marketing their speculative bounty.

Specialized packing methods for all produce advanced greatly by the 1920s and were common for prunes as well. Although there were several methods of packing available, one manner involved a wooden crate outfitted with interior components to protect the prunes. These were known as "tin top pack":"The prunes are packed in these tin tops according to size and the packs are known as 5x5,5x6 and 6x6, according to the number of prunes in a layer."[55] If tin was actually used in these packing crates, it serves as a reminder of the overall advances in metallurgy of the late 19th and early 20th centuries.

The dried prune industry grew into one that was certainly considered a quality-sensitive market for all involved fruit growers, brokers and customers. No matter the quality of prune, it still had to endure the marketplace before a profit could be made. Product accountability entered the scene as the prune industry grew more competitive, and box labels aided in this process.

## Labeling

While some growers were content selling their prunes in plain, unmarked boxes or bags, standardization of the


Fig.4.1 Box label for Italian Prunes from Hood River Oregon. The colorful and picturesque scene depicted was visually attractive for consumers.Image courtesy of Lane County Historical Museum.

industry pressed for product responsibility. One way to ensure quality was to attach a recognizable label or stencil to the product.(Fig.4.1) Establishing product identity through labeling required growers to push onward towards industry standardization.

While individual growers began to experiment with labels for their crop, the industry turned to a more efficient marketing plan. Labels reflected this as they came to represent larger groups of prune growers in the form of agricultural cooperative associations.

## Cooperative Marketing

As the 19th century slipped into the 20th, the prune industry experienced greater social changes and industrialization in general. Fully productive orchards

produced a surplus of dried prunes, which flooded the market. A report published in 1901 noted that,

> With the rapid increase in bearing acreage since 1894-95 there has been a decided decline in the average market price of the product...As the marketable output has increased and the price declined, producer and dealer alike have turned their attention to the problems of improvement in quality and extension of markets.[56]

The success of the prune industry around the turn of the 20th century forced participants to find creative new ways to enlarge their customer base. To a great extent, this process then fell directly to retailers and grocers who purchased prunes from the growers.

Cooperative marketing pressured growers to focus on producing the crop while they took responsibility for establishing distant economic connections. Cooperative organizations provided economic power to local growers. The basic concept of cooperative associations was built around the pooling of common resources. Cooperative associations were sprinkled throughout the plum growing regions, serving as distribution hubs for dried prunes. The main function of the cooperative association was to provide growers a convenient link between the orchard and marketplace. This business arrangement allowed plum growers to focus on the crop while cooperatives established relationships with Eastern markets.

One advertising technique the cooperatives utilized was sending recipe cards with the dried prunes. In 1900, the Willamette Prune Valley Association printed such cards, shamelessly promoting their superior product. The recipe card asserts:

> The Willamette Valley Prune Association, has adopted as a trade mark and patented the use of the Pheasant to represent that which is finest and best in the production of the famous Oregon Prune. The consumer should always buy Pheasant Perfection (10-lb. size), Imperial Pheasant (1-lb. package), or Pheasant Brand (25-lb. box), in the original package, thus insuring their absolute cleanliness. Sterilized, cleansed and packed while very hot, they contain no foreign matter whatever. Persons accustomed to the use of small insipid prunes will be delighted with the Pheasant Brand of Prunes. They can be used in a hundred ways in the preparation of healthful, nutritious and palatable dishes. A box of these fine goods should be kept in every pantry.[57]

The front of the recipe card featured a colorful illustration of a pheasant,used to reinforce buyer preference.(Fig.4.2)


Fig.4.2. The Oregon Pheasant Brand of the Willamette Valley Prune Association included colorful recipe cards encouraging buyers to re-patronize. Image courtesy of the University of Oregon Libraries Special Collections.

Major changes to the prune industry began to take place as growers turned to cooperative marketing. This provided some amount of insurance against the unpredictable prune crop, which was liable to have both good and bad years. By banding together in larger groups of local cooperatives, growers created a safety network for their somewhat fragile and specialized industry. By 1927, 35 to 40 percent of the northwestern prune crop was marketed through cooperative systems that had sprung up near almost every prune growing district.[58] Although the cooperative dried prune industry created some complications with a middleman, on average net profit returns for growers increased, as did selling power in Eastern markets.

Cooperative fruit marketing continued to struggle with unsatisfactory glitches in the industry, such as the general lack of standardization within each harvest. One observer noted:

> It will hardly be necessary here to call attention to the value of careful packing, honest facing, clean packages, plain stencils, and all the other details of neatness which have been proven over and over again to be the secrets of profitable fruit selling with all classes of fruits. A man who knows enough to grow a special crop like plums will surely know the importance of these things and will put them into conscientious practice.[59]

The argument behind cooperatives on a local level was to increase the economic power of any given prune growing region. By joining a dried prune cooperative, growers could focus on producing the most superior fruit possible as a testament to the "enterprise and intelligent industry"[60] of growers of dried prunes.

The object in labeling prunes was to create a memorable image that consumers recognized as a preferred product. The drupe itself was known to produce as many flavors as favorable growing locales, and thus new labeling systems proudly announced the prune's origin as a tactic to glamorize the product. Some headway was made in the cooperative movement to rightfully identify the origin of ideal fruit. This was seen by some agriculturists as a way to promote their farm and showcase their glorious interpretation of dried prunes. It was essential that individual growers realized:

> No community can become known in the markets of the country, and especially to the great consuming public, unless the fruit is handled, graded, and packed under standard rules and regulations and sold under an association trade-mark brand, each local unit retaining its own local brand in addition to the trade-mark to identify the quality of fruit in the community."[61]

In order to achieve quality, cooperative buying gained direct control over the prune crop, allowing standardization to take place in a more efficient manner. Using discretion to weed out bad fruit, cooperatives were more likely to produce uniform, dependable quantities of crops from season to season. Possibly true for all successful enterprises, "Excellence pays at least double the profit in any business over what is possible for careless work of any kind."[62]


Fig.4.3 This geographically specific label indicates the flavor profile of prunes grown in the Umpqua region, marketed by the South Douglass Co-operative near Myrtle Creek, Oregon. Image taken from website, www.thelabelman.com.

**Branding**

Labels evolved from individual orchardists to a more standardized version representing the relevant cooperative. Generalized scenes of prune commerce, often noting distinguishing characteristics or adjectives describing the product inside, became popular themes for labels. Much as individual growers had attempted, cooperatives sought to link the physical product of dried prunes with enticing visual images and writing on the label. (Fig.4.3) One agricultural bulletin suggested that the format include, "A distinct name, 'tart-sweet' for the Italian and 'Oregon-Sweet' for the French, for illustration, should be selected

and copyrighted for use on all prunes that have passed a rigid inspection as to quality. The name should be descriptive."[63] By assigning a flavor category to a particular brand and thus the origin of prune, consumers were better able to distinguish preferences among geographical areas.[64] The description used to assign various flavors to prunes from Oregon and Washington reminds again of the most silent partners in the industry: prune driers.

As the industry solidified, growers attempted to brand their product to establish a visual and palatable connection between the box and interior contents of desiccated plums. Individual growers of various sizes embraced the cooperative dried fruit movement and helped to rectify longstanding deficiencies in the industry.[65] With subscription to local cooperatives, accountability passed from the hands of the growers and thus the prune industry remained stable until the 1930s.

NOTES

[37] Burke H. Critchfield, United States Department of Agriculture, "Demand, Marketing and Production of Oregon and Washington Prunes," *Department Circular 416* (Department of Agriculture: Washington D.C., 1927) , 7.

[38] James G.Ashbaugh, "A Geography of the Columbia River Ports" dissertation, (Ph.D. diss.,University of California, 1965) , 9.

[39] Ibid, 10.

[40] Edward R. Lake, United States Department of Agriculture, Division of Pomology, *Prunes and Prune Culture in Western Europe With Special Reference to Existing Conditions in the Pacific Northwest* (Government Printing Office:Washington, D.C., 1901) , 12.

[41 41] S.A. Clarke, *The Prune Industry and Orchard Work Adapted to The Pacific Northwest, of Candelaria Fruit Farm, Salem, Oregon* (Printing Department: Portland, 1891) , 13.

[42] *Oregon Agriculturist and Rural Northwest*,(November 1, 1901, Volume 2, no.4) , 52-53.

[43] Critchfield, 23.

[44] Ibid., 6.

[45] Ibid.

[46] *"Better Fruit"*, vol.1, no.2.,(Better Fruit Publishing Company: Hood River, Oregon, 1906-1907) ,117.

[47] Clarke, 12.

[48] *Oregon Agriculturist and Rural Northwest*, (November 15, 1901, Volume 2, no.5) , 65.

[49] Clarke, 59-60.

[50] Ibid.

[51] Lake, 12.

[52] Critchfield, 33.

[53] *Oregon Agriculturist and Rural Northwest*, (December 1, 1901, Volume 2, no.6) , 101.

[54] Clarke, 76.

[55] Paul H. Weyrauch, Washington State Horticultural Association, Proceedings Seventeenth Annual Meeting, *"Prune Growing in Washington"* (Walla Walla, 1921) , 158.

[56] Lake, 6.

[57] Willamette Valley Prune Association, "Oregon Pheasant," (Willamette Valley Prune Association: Salem, 1900).

[58] Critchfield, 47.

[59] Frank Albert Waugh. *Plums and Plum Culture: A monograph of the Plums Cultivated and Indigenous in North America:With a Complete Account of Their Propagation Cultivation and Utilization* (New York:Orange Judd Company, 1901) , 280-281.

[60] Thomas Condon, *Fruits and Flowers*, vol.1-2, Condon: ?, 1891-1892) , 116.

[61] J.D. Hurd, Oregon Agricultural College, *Extension Bulletin 396* "A Discussion of the Prune Problem Containing Recommendations to Growers and Dealers," (Oregon Agricultural College Extension Service:Salem, 1927) ,9.

[62] Condon, 106.

[63] Hurd, 11-12.

[64] Dwayne Rogers, website www.thelabelman.com, *"Plum and Prune Crate Labels,"* Page Accessed February 2012. Site last updated 2011.

[65] Ibid.

# Chapter 5: Plum Forgotten:Decline of the Industry

Growth of the Pacific Northwest dried prune industry experienced an entire life cycle of activity from the 1880s to the 1930s. The industry began with small, private drying operations and eventually expanded to large cooperative dryers. Mirroring the development of driers in the built environment, prune culture became larger, more complex and better known.

Prune culture and literature associated with the drupe in the Pacific Northwest began around the late 1880s as new orchards came into bearing. In achieving progress, the budding industry began to respond with more and more written documents pertaining to the practice of prune growing. Private grower S.A. Clarke shared his pomological skills and produced an instructive pamphlet for others in the industry in 1891. He noted that "so it will be seen that the Pacific Northwest is a region of great capacity for production in many favored localities, and it is important that we have a horticultural literature for our own needs."[66] To accomplish this during the national depression of the mid 1890s, Clarke turned to advertisers for financing during the economic downturn.

The rate of growth at which the industry progressed demanded quick responses, especially from private growers. In general, it seems that people involved with the prune industry in any form worked diligently to ensure its success. For Clarke, "it is due to the interest taken by prominent persons and firms engaged in business connected with, or dependent on horticulture, that I am able to

publish this little volume. Their advertising patronage has helped defray expenses so that I could afford to make the venture for it has not been done with any expectation of profit."[67] Clearly the demand for dried prunes turned enough of a profit to have an audience of clients willing to invest in prunes despite economic hardships. Clarke's work emphasizes the scientific nature of prune growing, which appealed to the general technological trends of the era. Seeing others and being seen, even in myriad forms found in the agricultural business, was vital for expansion of the Washington and Oregon dried prune industry.

## Dried Prune Culture

Prunes appeared in popular culture because of both the agricultural industry and the general public. Development of prune culture stemmed from both of these influencing factors, each contributing particular expressions to the overall operation of the industry. In either case, dried prunes were celebrated by the general public and evidence of this appeared in government documents, agricultural journals and cultural events.

Examples of agricultural literature manifested in the bi-weekly periodical *Oregon Agriculturist and Rural Northwest*, published for the agricultural communities of the Pacific Northwest from 1890-1920. Periodical entries include articles, advertisements and suggestions from readers. In the pages of this agricultural journal, subscribers share a year-round discussion about the prune season.[68] Discussion of the dried prune crop picks up around harvest time in September with accounts of the season's

productivity. Written accounts of prune activity continue until mid-winter, when the articles shift focus to the upcoming spring and suggestions for orchard maintenance in the off-season.

In the June 1, 1902, issue, an article entitled "The Outlook for Fruit" details of that year's poor spring weather and predicted damage to the season's crop. Weather during the spring of 1902 produced favorable conditions for blooms on the plum trees, but a cold snap damaged the potential fruit. According to the article,there was "an almost unequalled dropping of fruit in the Willamette Valley. In this valley and in Clark County, Wash., the Italian prune crop will be very short, and as was the case two years ago, some of the best districts have suffered most."[69] Similar articles comment on particular growing localities that may have been spared or particularly damaged by cold weather.[70] Two weeks later in the June 15, 1902, issue, the periodical claimed that "Almost the only exception to the favorable outlook is the case of the prunes, cherries and pears in Western Oregon."[71] Despite the unfavorable conditions for prune growing that particular season, the periodical featured articles relating to drier maintenance in the winter months. With certainty, the prune industry slept little in its most productive years, and this is reflected in agricultural literature from the era.

Articles often focused on drier maintenance topics in the off-season. Generally, during the spring, summer and winter months, plum growers would rebuild or repair their driers and related equipment. An anonymous author advised, "First, secure the best of material and a good workman; second, build your furnace with double walls and be sure

that is large enough; third, be sure the pipes are high enough above the cold air vents, so that the cold air might pass entirely under the heating pipes."[72] Suggestions for drier improvements continually evolved as the industry matured and prune culture developed. Readily-shared agricultural knowledge indicates the general support system of plum growers.

In addition to readers' opinions and preferences concerning drier maintenance, prolific advertisements for prefabricated fruit driers appeared in the *Oregon Agriculturist Rural Northwest* and other similar publications. Technological advancements in drier construction appealed to the general public's newly developing scientific psyche. This was also reflected in advertisements. Advertisers in the 1907 issue of *Better Fruit* provided illustrations of various driers to entice potential customers.(Fig.5.1)[73] Like many other advertised driers, the Schneider Stack Dryer proclaimed its ingenuity in design. The patent date for this particular drier is prominently located on the advertisement, to assure potential buyers of the drier's unique and trademarked design qualities.

Advertisements of this type generally presented a description of individual drier attributes directly pertaining to success rates. Explanations found in advertisements also reassured potential buyers that the expense of the drier would be returned in pure profit once construction was complete and drying commenced.

Mixed amongst informative articles, the *Oregon Agriculturist Rural Northwest* also offered optimistic snippets to subscribers. During the early days of the prune


Fig.5.1 The Schneider Stack Dryer of 1899, originating in North Yamhill, Oregon, claims a patented "Lifting and Lowering Device."

industry, growers experimented to find the most fertile conditions required for growing plums, as the land had yet to be cultivated. By the turn of the 20th century, most productive orchard lands were already in use and the most productive prune districts had been recognized and claimed. An unidentified author of the periodical writes:

> The days of hit-and-miss planting on a large scale are over, and the succeeding discouragement is about over. The places where money has been made in the growing of some particular kind or variety of fruit will be the places selected by the future planters of such fruit. The Italian prune has been more disappointing to the growers than any other of our important fruits, but there are places where it has been paid so well that the acreage there will steadily increase.[74]

Agricultural journals and periodicals provided a valuable resource for agriculturists. Particularly for prune growers with less than average carpentry skills, advertisements for pre-fabricated driers offered new possibilities for securing personal financial success with aid from the dried prune industry. Industry-related publications printed by private groups catered to the agricultural community by providing specialized literature suited to their interests.

**Government Publications**

As market demands increased, especially in the first two decades of the 20th century, the United States government participated in the dried prune industry through contributions of general publications, patents and agricultural census reports. Federal participation in the agricultural drama of the early 20th century aimed to scientifically increase crop yields. Regional publications provided through the United States Department of Agriculture highlighted the geographical diversity available for exploitation. Standardization and stimulation of the prune industry resulted from government involvement in agriculture across the nation.

The federal government worked closely with local universities to establish agricultural colleges during the late 19th and early 20th centuries. At the state level, educational institutions such as Oregon's Agricultural College in Corvallis carried out federal involvement with horticulture. Scientific investigation of regionally-important crops, including prunes, resulted in publications

of Experiment Station Bulletins. This service was offered by the Extension Office and dated from the 1890s to modern times.

These documents reflect common problems with the dried prune crop and typically offer solutions for those involved with the industry. During the early 20th century, early publications featured topics such as "*The Oregon Prune*,"(1900) or "*Drying Prunes in Oregon*"(1924) and "*Dried Italian Prune Products*"(1938).[75] From the late 1880s onward, these and similar articles closely reflect growth trends of the prune industry.

While the Agricultural Experiment Station Bulletins provided growers with a standardized and scientific knowledge base, published articles reflected the overall trends of the industry from the late 1880s to the 1940s. Decline in the dried prune industry first appears in bulletins dating to the 1940s, but data at least a decade prior indicate early declines in the industry. By 1927, it was noted that, "The only interest of the Extension Service in this matter is to be of service to one of Oregon's most promising agricultural enterprises. We shall be glad to serve in any capacity to the end that the industry may be saved from possible ruin."[76] In later attempts to stabilize the dried prune industry, articles pressing for further industry unification appeared in the article "*Some Economic Considerations Affecting the Marketing of Oregon Dried Prunes Through Cooperative Dried-Prune Packing Associations.*"[77] For many, future success of the dried prune industry hinged upon cooperative growing and marketing strategies.

The federal government also participated in the agricultural drama by recognizing patents for prune driers. As early as the 1870s, some growers had already turned to the government's influence for help in protecting their intellectual agricultural property through patent law. Individuals applying for patents for fruit driers, particularly for prunes, clearly specified how their driers were superior in construction to other models. As early as 1877, William Plummer of Portland, Oregon, submitted an application for "an improved apparatus for drying fruit, which shall be simple in construction, convenient in use, and effective in operation."[78] Other noted features in this

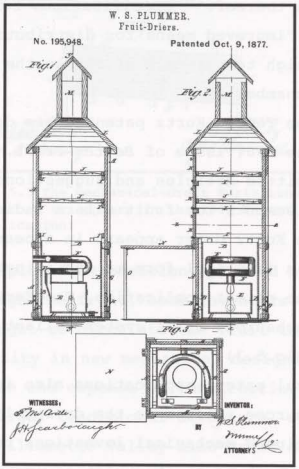



Fig.5.2 The 1877 Patent application submitted by William S. Plummer shows a section view of his modified fruit-drier.

natural-draft drier included portability, masonry components, and a pyramidal cover with a ventilating cap.[79] The corresponding illustration shows a section view of the drier's interior design. (Fig.5.2) Plummer's drier incorporates the major character-defining features of early prune driers.

In 1902, Clinton J. Kurtz of Salem, Oregon, submitted an application for a patent for a "*Fruit-Drier.*" The description explains, "the object of this invention being to provide an improved apparatus of this character in which trays of fruit can be inserted at one end and be gradually moved through the drying-chamber from the coolest to the hottest portion thereof."[80] Specifications for the Kurtz drier promised "improved means for distributing and maintaining a high temperature of air at the several parts of the drying-chamber."[81]

Perhaps one reason Kurtz patented his drier appears in the pages of the 1907 issue of *Better Fruit*. Among the subscriber-submitted articles and suggestions appear copious advertisements for fruit driers indicating interest and demand. The Kurtz drier appears in a nearly half page advertisement in identical form to the illustration presented in the patent application. The Kurtz drier is an example of a mechanical draft system reliant on tunnels and drying trays.(Fig.5.3)

Agricultural patent applications also included non-structural resources related to the drying industry. Submissions included mechanical inventions that did not specifically contribute to the built environment, but reflected the tendency of growers to experiment with modern interpretations of traditional drier construction. While

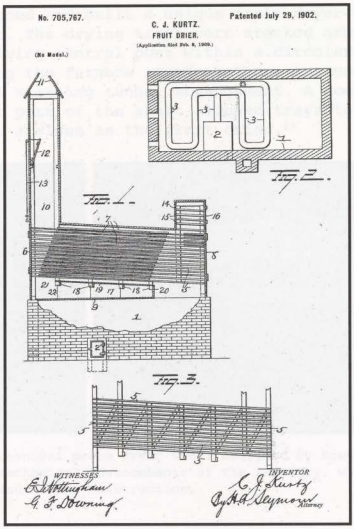
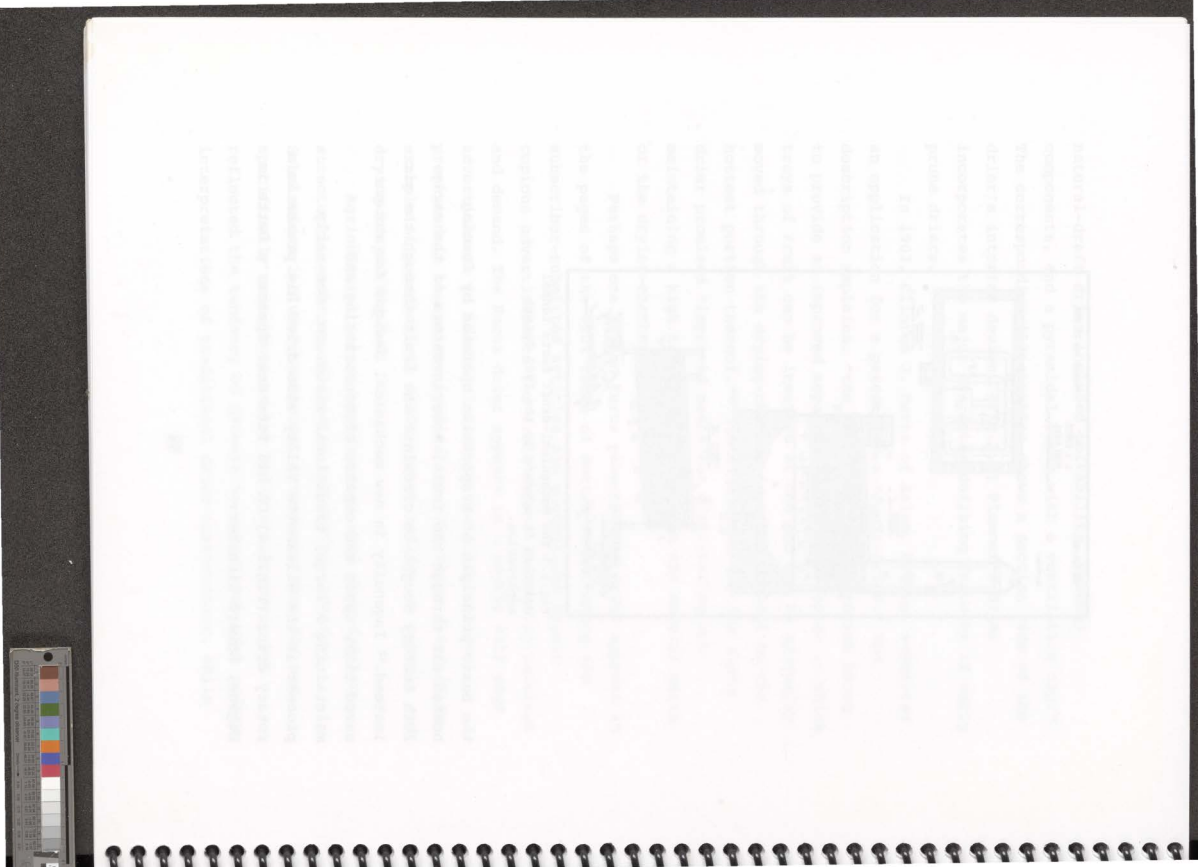



Fig.5.3 The mechanical-draft Kurtz tunnel drier as it appears in the 1902 Patent application.

the basic principle of evaporation operated by forcing heated air through the fruit, some inventors of the early 20th century sought to circulate the fruit through the air instead.[82] Ingenuity in new mechanical designs for driers saved time, space and expense of constructing and maintaining a large, traditional structure. One early pioneer in the Willamette Valley also dried his prunes in a rotary drier.(Fig.5.4) On his farm near Spencer's Butte in Eugene, Edward Zinniker:



designed and built a unique fruit dryer-a wheel dryer. The drying trays were stacked around a revolving central post within a circular shaft having the furnace at the bottom, instead of the usual slanting tunnel arrangement. A door into the upper part of the shaft allowed trays to be moved to lower shelves as the fruit dried.[83]

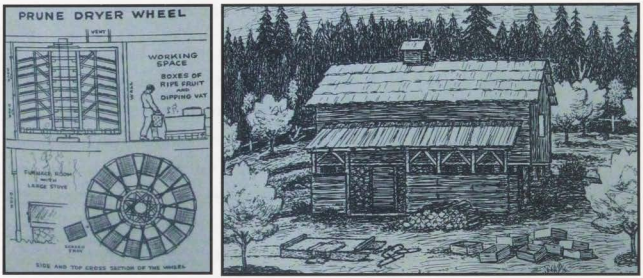



Fig.5.4 The mechanical prune dryer wheel designed by Edward Zinniker in 1920 reflects mechanical advancements of the industry, while his drier demonstrated traditional construction.

In Zinniker's case, his prune drying wheel was situated in a typical, gable-ended building with a short ventilator centralized at the roof's apex. His ingenuity in design was so successful he dried prunes for not only himself, but neighbors as well.[84]

The appearance of prune driers in the popular agricultural literature is a testament to the competitive nature of the industry. Government issued publications and grower ingenuity reinforced the dried prune industry from behind the scenes. Examples of traditional prune driers and mechanized adaptations contributed to the overall growth and success of the industry.

Popular culture related to the dried prune industry appeared in newspaper articles of the era. The general public played an enormous role in the development of the industry, both as consumers and mass media audience.

## Prune Driers in the News

The dried prune industry of Washington and Oregon had a slew of followers that participated in local newspaper circulation. Newspapers from the Pacific Northwest recorded current trends and articles that related to the dried prune industry. Analysis of these newspapers provides the possibility for modern interpretation into the historic dried prune industry. Insight into common, news-worthy details illustrates the impact that prune driers had both on the industry and the general, literate population as well.

By the early 19th century, newspaper articles, especially prolific in Oregon, appeared with myriad references to the prune drying industry. The information gleaned from the pages of these periodicals indicated the evolution of prune driers and brings to light other interesting details. In 1901, an enthusiastic article entitled "The World's Largest Fruit Drier" appeared in *The New Age* paper out of Portland, Oregon. The article asserts:

> "A prune dryer that is expected to dry 30 carloads of cured prunes this season, that will afford employment to probably 100 persons, and is said to be the largest prune drier in the world, is to be put in operation next week at the orchard of the Corvallis and Benton County Prune Company, six miles north

> of Corvallis. About $6,000 in cash and three months of time have been devoted to the building of the drier, and barring a few minor details, it is now ready for work...The new plant will receive 2300 bushels of green prunes at one time. It consists of 10 tunnels, or, more properly speaking, five twin tunnels. Each of the ten tunnels is 80 feet long, 44 inches wide and 44 inches from floor to ceiling." [85]

The proud description of this Corvallis drier reminds readers of the impressive technological advances used in drier construction. Simple, yet efficient, prune driers of the early 20th century continued to grow in size, ever captivating interested public audiences.

Newspapers appearing during the height of the dried prune industry, from the 1880s to the 1920s also commonly indicated general information regarding the progress of the dried crop. The *Morning Oregonian*, published in September of 1901 included several snippets of prune-related information within the same column. The pertinent articles include the titles of "Prunes About Dallas Being Picked," "Prune Driers Will Soon Start," and "Prune Drier at Work."[86] As plums in the orchard began to ripen, industry-related information began to appear in newspapers, chronicling that year's crop through written words.

Nearly as often as updates on the growing season occurred, articles appeared concerning the flammability of prune driers. One of the most common dangers to

structures in historic times was fire. Prune driers were certainly susceptible to fire damage since stoves and associated pipes were located in close proximity to the structure itself. The development of the dried prune industry did not evolve much before articles began to comment on extreme fire danger during the drying process. In the August 1903 issue of Salem, Oregon's *Daily Journal*, an article entitled "Prune Grower's Fire Relief"[87] detailed the costly losses often associated with drier conflagrations, previously unrecognized by insurance companies. According to this information:

> The Oregon Fire Relief association has not insured prune driers in the past, though a number of hop houses were carried as risks, and it was shown to the management that prune driers are no more hazardous risks than are hop houses, and that it would be a profitable business to write prune driers.[88]

It is interesting to consider similarities in the building forms of hop and prune driers; this was an accepted fact in the general agricultural audience.

Because the hop industry was established prior to the dried prune industry, insurance for hop kilns also appeared first. According to the 1903 article in the *Daily Journal*, "under the laws of this state, a new mutual fire relief association must allow insurance risks aggregating $300,000, at not more than $1,000 for

one policy holder."[89] As the number of prune driers increased during the first two decades of the 20th century, reports of drier fires appeared with heightened frequency in newspapers. In 1905, the *Daily Journal* ran a notice entitled, "Prune Drier Burned: E.E. Barnett Loses Drier and Entire Crop From 38 Acre Orchard."[90] As was the case with many drier fires, not only was the structure compromised, but often the crop held inside was also destroyed. The same article also explains that, "Mr. Barnett had about 20 tons of prunes, valued at nearly $2,000, on which it is known that he had $1,000 insurance. His dryer was also insured."[91] Occurrences of reported drier fires in newspapers generally correlated with the most dense areas of prune production.

This was also the case when the 1914 issue of Winston, Oregon's *Eagle Valley News* reported other drier incidents caused by fire. This particular issue contains several short agricultural notices. Two of these are related to dried prunes. The first relevant article is titled "Winston Prune Drier Burned" and notes that, "The drier was stocked with prunes, and the loss will total $3,000. Mr. Agee carried $1,000 insurance on the prunes."[92]The second related articled is concerned with the status of the crop and notes, "The prunes in this vicinity are being brought to the dryer rather slowly, because the crops are small."[93]

Interestingly, there is an adjacent article entitled "Springfield Hops and Dryer Burn," once again reminding the reader of the similarities of prune and hop kilns and the associated dangers of drying structures. Ironically, newspapers also carried advertisements for the very stoves responsible for the fiery demise of so many prune driers.

A full page reference to Northwestern Stove Foundry, of Portland, Oregon, appeared in the 1905 issue of Salem's *Daily Capital Journal*. This company specialized in all types of stoves and included domestic and commercial products. The last section of the article offers an interesting sales pitch to prune and hop growers. It states:

> Their line of Hop Stoves and Prune Driers has been improved and added to from time to time till today they make every style and size that the Hop and Prune Growers of the Willamette valley have occasion to use, and the attention that has been paid to this particular trade in the past has met with well-deserved success.[94]

Advertisements for stoves occupied prime newspaper space right along with growers' demands for fire insurance. It seems most prune drier-related information that appeared in 20th century periodicals strongly reflected the economic component of the industry.

Newspapers historically served their readers best by including local topics of interest, which often

included interesting snippets related to the dried prune industry. Perhaps the secluded location of Washington's San Juan Islands inspired a little whimsy in prune drying culture in the 1907 article published in the *San Juan Islander*. The newspaper reports, "Miss Lulu Pike gave a Valentine party in her father's prune drier to a jolly lot of youngsters."[95] It is amusing to consider alternate uses for prune driers, and once again, these structures had an impressive impact on prune culture in general.

Although dried prunes mostly had a place in Eastern markets, plum-growing regions of the Pacific Northwest celebrated the locally-derived commodity in several ways. Agriculturists on the West Coast turned to the public with solicitations for home-grown produce to be put on public display. This occurred locally at state fairs and nationally at the 1893 World's Fair in Chicago. This, in turn, put a national spotlight on agricultural goods imported from the West Coast.

The states of Oregon and Washington submitted samples to their state fairs of their best produce to better showcase their agricultural successes and inclinations. State fairs presented glamorous displays of prime fruit samples, both fresh and dried.[96] The 1891 Oregon State Fair included a pagoda called Marion's Fruit Palace, clad entirely in fruit samples.[97] Presentations of agricultural wealth, especially with dried prunes, reminded the public of the newly available flavors and potential health benefits.

The booming dried prune industry of the last two decades of the 19th century flooded the market with multiple varieties of desiccated fruit. In 1892, an Oregon committee formed in Portland to compile superb examples of the dried prune bounty intended for display at the 1893 World's Fair in Chicago. Committee members implored growers to supply their best products,"which will fully illustrate the pomological resources of the state, and no inferior fruit of any kind will be used in making up the collection."[98] The committee's main goal was to provide distant fair-goers with the most impressive samples in order to create early brand-name associations. Presence of dried prunes from the Pacific Northwest at the World's Fair in Chicago delighted the public that was hungry for new culinary delights. In return for the committee's efforts at soliciting superior samples of dried prunes, a national audience of prune consumers in the Eastern part of the country began to go crazy for dried prunes.

Prunes as spectacle appeared in the early 20th century to awe public audiences. One of the most vivid examples occurred in the San Francisco Midwinter Fair in 1894. Colossal displays such as the Prune Knight(Fig.5.5) inspired the crowds to consider their foods as having artistic merit and potential for practical culinary purposes.[99] The larger-than-life Prune Knight constructed of abundant drupes attracted throngs of people, as did similar agricultural displays at fairs and expositions across the United States in the late 19th and early 20th centuries.

In conclusion, the dried prune industry of the Pacific Northwest developed from humble beginnings. Advent of prune driers in the built environment developed after plum

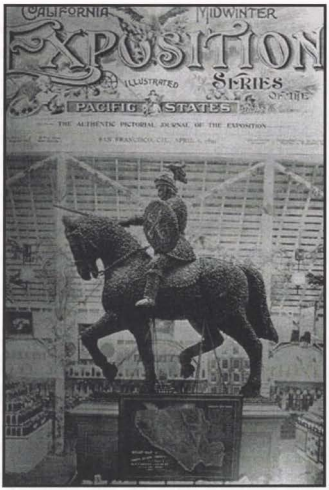



Fig.5.5 The Prune Knight, constructed entirely out of dried prunes, as exhibited at the 1894 California Midwinter Exposition.

orchards came into bearing during the late 1880s. Influenced by the building forms of hop kilns, prune driers evolved to meet the demands of a changing, progressive industry fueled by popular market appetite. Attempts at industry standardization resulted in building large prune driers, as cooperative associations struggled to empower small local plum growers. As evidenced by the Clark Prune Drier on Orcas Island in Washington, growth of the industry depended on reliable transportation networks via water and rail. Although prune driers served as a background participant in the industry, their existence filled a

function and a niche in the agricultural built environment of the Pacific Northwest during the late 19th and early 20th centuries.

## NOTES

[66] S.A. Clarke, *"The Prune Industry and Orchard Work Adapted to The Pacific Northwest,"* of Candelaria Fruit Farm, Salem, Oregon (Printing Department: Portland, 1891) , 65.

[67] Ibid, 98.

[68] *Oregon Agriculturist and Rural Northwest,* (December 1, 1901, Volume 2, no.6) , 101.

[69] Ibid., 274.

[70] Ibid., 292.

[71] Ibid., 289.

[72] Ibid., 181.

[73] *Better Fruit,* Vol.2, No.1, July 1907 (Hood River: Better Fruit Publishing Company, 1907), 9.

[74] Ibid., 369.

[75] G.W. Shaw, *"The Oregon Prune: Its Composition, Food Value, Soil Draught,"* Oregon Agricultural Experiment Station Bulletin 61 (Corvallis: Oregon Agricultural College, 1900).

[76] C.J. Hurd, *"A Discussion of the Prune Problem: Containing Recommendations to Growers and Dealers,"* Oregon Agricultural College Extension Service Bulletin 396 (Corvallis: Oregon Agricultural College, 1927) , 4.

[77] Daniel B. DeLoach and Charles W. Peters, *"Some Economic Considerations Affecting the Marketing of Oregon Dried Prunes Through Cooperative Dried-Prune-Packing Associations,"* Oregon Agricultural Experiment Station Bulletin 378 (Corvallis: Oregon State College, 1940).

[78] William S. Plummer, United States Patent Office, Patent Number 195,948, *"Improvement in Fruit-Driers,"* (United States Patent Office: Salem, 1877) ,1.

[79] Ibid.

[80] Clinton J. Kurtz, United States Patent Office, Patent Number 705,767, *"Fruit-Drier,"* (United States Patent Office: Salem, 1902) , 1.

[81] Ibid.

[82] Theodore L. Riggs, United States Patent Office, Patent Number 234,202, *"Fruit-Drier,"* (United States Patent Office:Portland,1880) , 1.

[83] Lane County Historical Museum, *Spencer Butte Pioneers,*(Eugene:Lane County Historical Museum, 1987) , 55.

[84] Ibid.

[85] *The New Age* (Portland). 1901. September 28.

[86] *Morning Oregonian* (Portland). 1901. September 18.

[87] *The Daily Journal* (Salem). 1903. August 21.

[88] Ibid.

[89] Ibid.

[90] *Daily Capital Journal* (Salem). 1905. October 10.

[91] Ibid.

[92] *Eagle Valley News* (Richmond). 1914. September 24.

[93] Ibid.

[94] *Daily Capital Journal* (Salem). 1905. January 2.

[95] *San Juan Islander* (Friday Harbor). 1907. January 23.

[96] *Fruits and Flowers of Oregon and Washington.* Vol.1-2 (Portland:D.H.Stearns [1891-1892]) , 31.

[97] Ibid.

[98] Ibid., 253.

[99] *Found San Francisco,* online source. Website http//:foundsf.org. Accessed December 2011.Page last updated 2011.

# REFERENCES CITED


Agricultural Census Data. Statistics of Agriculture. 10th-14th Census Reports (1890-1920). Online Source: http://wwwwagcensus.usda.gov. Page accessed March 2012. Site last updated 2012.

Ashbaugh, James G. "A Geography of the Columbia River Ports." Ph.D. diss, University of California, 1965.

"Better Fruit," Vol.2, No.1. Better Fruit Publishing Company: Hood River, Oregon, 1906-1907.

Boyd, Albert H. United States Patent No. 1,999,533, "Process of Drying Prunes." United States Patent Office: Newberg, 1931.

Branton, Ivan C. *A Hop Drier for Oregon Farms.* Agricultural Experiment Station Bulletin 474. Corvallis: Oregon State College, 1950.

Clarke, S.A. *The Prune Industry and Orchard Work Adapted to The Pacific Northwest.* Candelaria Fruit Farm, Salem, Oregon. Portland, Oregon:Printing Department, 1891.

Critchfield, Burke H. *Demand, Marketing, and Production of Oregon and Washington Prunes.* United States Department of Agriculture Circular 416. United States Department of Agriculture: Washington D.C., 1927.

Condon, Thomas. *Fruits and Flowers*, vol.1-2. Condon, 1891-92.

Conklin, Arthur. United States Patent No. 448,846, "Fruit-Drier." United States Patent Office: Grants Pass, 1890.

Courtois, Shirley L. *Arndt Prune Dryer National Register of Historic Places Inventory Nomination Form.* Washington State Historic Preservation Office: Olympia, 1979.

DeLoach, Daniel B. and Charles W. Peters. *Some Economic Considerations Affecting the Marketing of Oregon Dried Prunes Through Cooperative Dried-Prune-Packing*

*Associations.* Oregon Agricultural Experiment Station Bulletin 378: Corvallis, 1940.

Fowler, William A. *Markets for Oregon and Washington Dried Prunes*, vol.1, no.1. University of Oregon Press: Eugene, June 1929.

*Fruits and Flowers of Oregon and Washington.* Vol.1-2. (D.H. Stearns: Portland, 1891-1892).

Hurd, J.D. *A Discussion of the Prune Problem Containing Recommendations to the Growers and Dealers.* Oregon Agricultural College Extension Bulletin 396. Oregon Agricultural College Extension Services: Salem, 1927.

Jackson, Philip L. and A. Jon Kimerling, *Atlas of the Pacific Northwest* Corvallis:State University Press, 2003.

Kurtz, Clinton J. United States Patent Number 705,767, "Fruit-Drier." United States Patent Office: Salem, 1902.

Lake, Edward R. *Prunes and Prune Culture in Western Europe, with Special Reference to Existing Conditions in the Pacific Northwest.* United States Department of Agriculture: Division of Pomology, 1901.

Nelson, Bette Davis. *Davis, John and Magdalena Farm National Register of Historic Places Nomination Form.* Oregon State Historic Preservation Office: Salem, 2005.

Olsen, Michael. "The Beginnings of Agriculture in Oregon and Washington." Thesis, University of Washington, 1970.

*Oregon Agriculturist and Rural Northwest*, Vol.1-2, No.4. November 1901.

Oregon State Historic Preservation Office, Oregon Parks and Recreation Department. *Historic Resources Survey and Inventory Database.* Online Source: http://www.oregon.gov.

Parrish, Ronald William. *Parrish Farmstead National Register of Historic Places Nomination Form.* Oregon State Historic Preservation Office: Salem, 1999.

Plummer, William S. United States Patent No.195,948, "Improvement in Fruit-Driers." United States Patent Office: Portland, 1877.

Riggs, Theodore L. and Daniel L. Riggs. United States Patent No. 234,202, "Fruit Drier." United States Patent Office: Salem, 1890.

Rogers, Dwayne. "Plum and Prune Crate Labels." Online Source: http://www.thelabelman.com. Site accessed February 2012. Last updated 2011.

Shaw, G.W. *The Oregon Prune: Its Composition, Food Value, Soil Draught.* Oregon Agricultural Experiment Station Bulletin 61. Oregon Agricultural Experiment Station Bulletin. Oregon Agricultural College: Corvallis, 1900.

Stebbins, R.I. *Growing Prunes.* Oregon State University: Corvallis, 1993.

Tomlin, Michael A. *Tinged With Gold: Hop Culture in the United States.* University of Georgia Press: United States, 1992.

University of Oregon, Digital Collections Building Oregon: Architecture of Oregon and the Pacific Northwest. Metadata Services and Digital Projects. Website http://oregondigital.org/digcol/archpnw. Page Accessed July 2011. Last updated May 2010.

Washington State Department of Archaeology and Historic Preservation. Washington Information System for Architectural and Archaeological Data. Online Source: http://www.dahp.gov.

Waugh, Frank Albert. *Plums and Plum Culture:A Monograph of the Plums Cultivated and Indigenous in North America: With a Complete Account of Their Propogation, Cultivation, and Utilization.* Orange Judd Company: New York, 1901.

Weyrauch, Paul H. "Prune Growing in Washington," Washington State Horticultural Association Proceedings of the Seventeenth Annual Meeting, 1921.

Wiegand, Ernest H. *Drying Prunes in Oregon and Washington*.. Oregon Agricultural College Experiment Station Bulletin: Corvallis, 1924.

Willamette Valley Prune Association, "Oregon Pheasant," Willamette Valley Prune Association: Salem, 1900.

## NEWSPAPERS

*Daily Capital Journal* (Salem) 29 August 1898; 18 September 1901; 24 August 1903; 2 January 1905; 10 October 1905.

*Eagle Valley News* (Richmond) 24 September 1914.

*Malheur Enterprise* (Vale) 22 November 1919.

*Morning Oregonian* (Portland) 18 September 1901.

*New Age* (Portland) 28 September 1901.

*Ontario Argus* (Ontario, Oregon) 30 March 1916.

*San Juan Islander* (Friday Harbor) 2 July 1902; 23 May 1901; 16,20 June 1901; 2 October 1902; 22 January 1903; 28 January 1904.

## SUPPLEMENTAL SOURCES


Barry, P. *The Fruit Garden; A Treatise.* Published by the Author: Rochester, New York, 1863.

Brooks, Reid M. and Claron Hesse. *Western Fruit Gardening.* University of California Press: Los Angeles, 1953.

Cruess, W.V. The American Journal of Public Health. "Evaporation of Fruits and Vegetables." University of California: Berkeley, 1920.

Goff, E.S. Wisconsin Agricultural Experiment Station Bulletin No.63: "The Culture of Native Plums in the Northwest." University of Wisconsin: Madison, 1897.

Hendrickson, A.H. "Prune Culture in California." California Agricultural Extension Service:Circular 41. The College of Agriculture, University of California: Berkeley, 1930.

Holbrook, Stewart H. *The Story of American Railroads.* Crown Publishers: New York, 1947.

Rauchenstein, Emil. California Agricultural Experiment Station Bulletin No. 459: Economic Aspects of the Fresh Plum Industry. University of California Printing Office: Berkeley, 1928.

Sears, Fred. *Traditional Orcharding: Practical Methods for Growing and Marketing Fruit.* Edited by Kary C. Davis. The Lyons Press: Guilford, Connecticut, 2003. [Originally published in 1914 by J.B. Lippincott Company as *Productive Orcharding*]

United States Department of Agriculture, "Agricultural Statistics 1936" (United States Government Printing Press: Washington D.C.) , 1936.

Waugh, Frank Albert. Vermont Agricultural Experiment Station Bulletin No. 89: *Plum Culture.* Free Press Association:Vermont, 1901.

Yamhill County Federation of Community Clubs, *Yamhill County Oregon: Pastures New for Home Builders.* Yamhill County Federation: Yamhill County, 1922.

Young, F.G. (managing editor). The Commonwealth Review of the University of Oregon."Physical and Economic Geography of Oregon," vol. V1, No.2 and 3, April-July. University of Oregon: Eugene, 1924.