

# THE EVOLUTION OF THE AMERICAN LEMON-GROWING INDUSTRY\*

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Nearly one-third of all the lemons grown in the world come from a few fruit-growing districts in Southern California. Average annual production over the past ten years has been about 15,000,000 boxes per year.<sup>1</sup> The only other major producing area in the world, Italy, has averaged around 14,000,000 boxes per year.<sup>2</sup> The production of the principal lemon-growing areas of the world is shown in Table 1.

TABLE 1  
LEMON PRODUCTION — PRINCIPAL COUNTRIES (Millions of Boxes)

	1961-62	62-63	63-64	64-65	(est.) 65-66
United States	16.7	13.9	19.0	14.2	17.0
Italy	14.3	10.4	14.1	16.4	15.7
Greece	2.5	2.6	2.4	2.6	3.1
Spain	2.7	1.6	1.7	3.2	2.7
Turkey	1.5	1.6	1.7	1.1	1.6

Source: U.S. Department of Agriculture, Foreign Agricultural Service. *The Marketing Situation for Winter Citrus in Europe*. (Washington, February, 1966), p. 18.

On the basis of value of production lemons rank fifteenth among the agricultural commodities in the State of California. In the eight most important lemon-producing counties lemons usually account for ten per cent or more of the total value of agricultural production (Figure 1). In Ventura County (Figure 2) the lemon is the most important commodity produced and generally accounts for over one-third of the total value of all agricultural products grown within the county.<sup>3</sup> (Table 2)

This impressive position in the production of lemons is the result of a remarkable growth of the industry over the past one hundred years. During the 19th century and in the first decade of the 20th century Italian fruit-growers held a virtual monopoly on the sale of lemons in the United States. Fruit grown in Florida and in California was considered to be of poor quality and could not compete with Sicilian fruit.<sup>4</sup>

Very gradually California growers overcame their production and marketing problems and captured a larger and larger share of the world

\*This study expands certain aspects of Prof. Durrenberger's doctoral dissertation, which was supervised by Prof. Zierer [*Climate as a Factor in the Production of Lemons in California* (Los Angeles, University of California, 1955) 350 pp.].

<sup>1</sup> U. S. Department of Agriculture, Statistical Reporting Service, *California Fruits*. (Sacramento, August 10, 1966).

<sup>2</sup> U. S. Department of Agriculture, Foreign Agricultural Service, *The Marketing Situation for Winter Citrus in Europe*. Foreign Agriculture Circular Citrus FCF 2-66. (Washington, February, 1966), p. 18.

<sup>3</sup> Country Agricultural Commissioners Reports for 1965.

<sup>4</sup> Frank M. White, "Orange, Lemon and Grape Trade," *Harpers Weekly*, 33 (January 26, 1889), pp. 64-66.

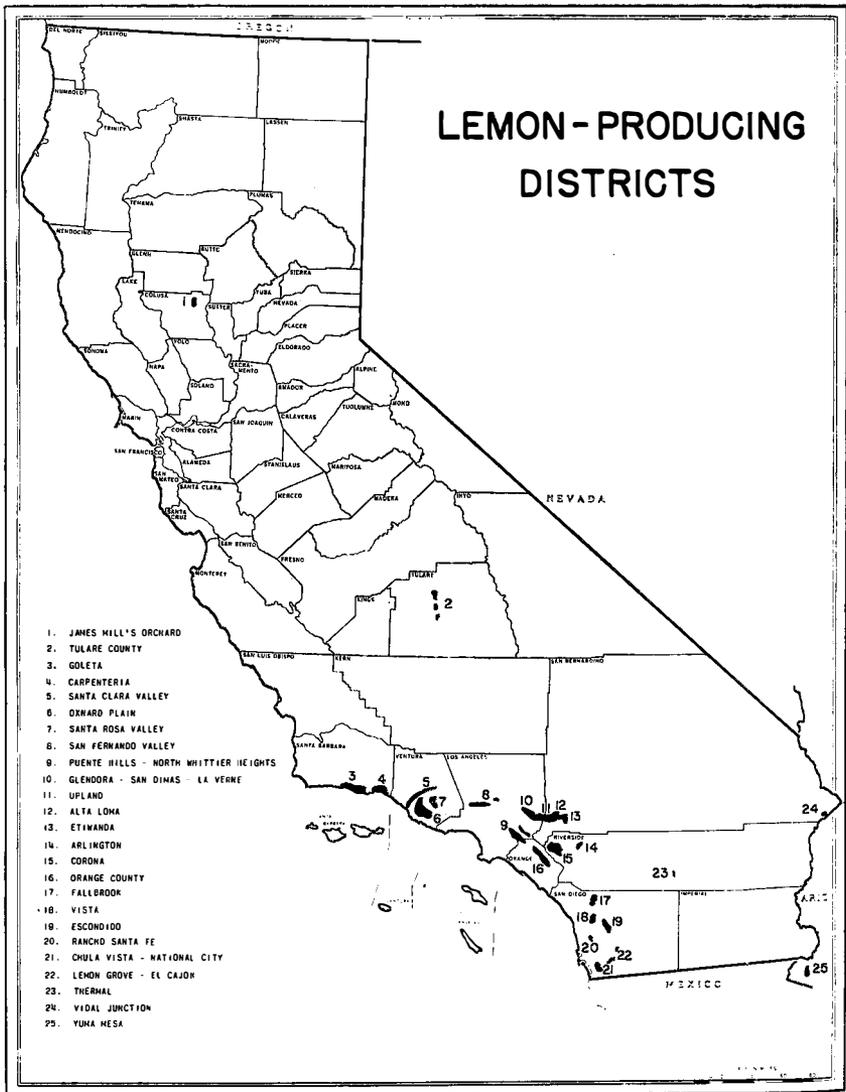


Figure 1

**TABLE 2**  
**CALIFORNIA LEMON PRODUCTION — 1965 (Acres)**

Alameda	1	—	1
Butte	7	—	7
Fresno	146	31	177
Imperial	146	116	262
Los Angeles	2,760	15	2,775
Orange	1,040	131	1,171
Riverside	3,198	520	3,718
San Bernardino	3,949	37	3,986
San Diego	1,946	137	2,083
San Luis Obispo	2	—	2
Santa Barbara	5,564	200	5,764
Santa Clara	6	—	6
Santa Cruz	1	—	1
Sonoma	24	18	42
Tulare	1,697	430	2,127
Ventura	21,272	1,513	22,785
	41,759	3,148	44,907

Source: California Crop and Livestock Reporting Service. *California Fruit & Nut Acreage*, (Sacramento, 1966), p. 12.

lemon market. Their share of lemon sales in the United States rose from a few per cent in the 1880's to 18 per cent in 1900. By 1920 their share had increased to 75 per cent. After 1930 only small numbers of foreign lemons were being imported and American lemons were entering West European markets in large numbers.<sup>5</sup>

How did the lemon-growing industry become established in the United States, and what factors have led to the dominant position of Southern California in the industry?

#### ATTEMPTS TO GROW LEMONS IN SOUTHEASTERN UNITED STATES

It appears almost certain that the lemon (*Citrus limon*) is a native of northeastern India or Burma. The earliest references to the lemon are to be found in Sanskrit and Chinese literature while the Greeks and Romans seem to have had no knowledge of the tree or its fruit.<sup>6</sup> The Moors carried the plant into Spain, and Crusaders brought the plant back to Italy from Palestine and Turkey.

From Spain Columbus carried lemon seeds on his second journey to the New World. From the West Indies the lemon migrated to the mainland area where, in a climate somewhat like that of southeast Asia, it grew wild. The Spanish *Conquistadores* and mission fathers furthered the spread of this and other varieties of citrus wherever they went in the Americas. In Florida the Indians are said to have used citrus and aided in its dissemination.<sup>7</sup>

Citrus fruits were carried northward through Florida into the Cape

<sup>5</sup> Data obtained from various issues of the *California Citrograph* and the annual reports of *Sunkist Growers*.

<sup>6</sup> Harold W. Glidden, *The Lemon in Asia and Europe*, (Princeton: The Institute for Advanced Study, n. d.), p. 395.

<sup>7</sup> Herbert John Webber and others, *The Citrus Industry*, (Berkeley: University of California Press, 1943: 1st ed.), 1, pp. 7-8.



Figure 2. A view of the Santa Clara Valley looking west; the town at the right is Santa Paula.

Fear settlement in the Carolinas in 1664 and westward along the Gulf Coast as far as Texas. In Florida most of the early plantings were along the northeast coast in the Indian River country and around the principal settlements.<sup>8</sup> According to accounts of English visitors to St. Augustine, Florida, in 1763, oranges and lemons grew in the city without cultivation and produced fruit better than that of Spain and Portugal.<sup>9</sup> Plantings along the Gulf of Mexico in Alabama and Mississippi were near the coast on the high bluffs of the salt water bayous while in Louisiana, "the infallible orange region," as it was called, extended for about fifty miles along the lower reaches of the Mississippi River.<sup>10</sup>

However, commercial production of citrus in the Southeast was not significant until after the American annexation of Spanish territory in 1821. Settlers from the United States took over Spanish plantings and the groves of trees which grew wild and began to ship citrus to other parts of the United States.<sup>11</sup>

Prior to the 1860's the commercial citrus crop of Florida was limited to the output of a few small groves in the northern part of the state. Most of the groves were located along the banks of the St. Johns and other rivers, since practically the only means of transportation was by river boats. The methods of culture, harvesting, and shipping were very crude, but in spite of the many handicaps the pioneer growers prospered. The building of railroad lines into the area in the early sixties brought about a rapid growth of the industry. A U. S. Department of Agriculture report published in 1887 describes this development:

Lemon culture in south Florida is making rapid strides of progress. Well informed cultivators know that the lemon is a necessity to the people of the United States: that there is a market for every first class lemon, that can be produced, and more too . . . .

The time was, and not so very long ago, either that the most of the people in Florida believed that a marketable lemon, within sweet rind, first class acid, and medium size, could not be produced on Florida soil. The only lemons known in Florida were coarse, overgrown seedlings of the Messina and Sicily lemons, the little bush 'everbearing' variety, and the venerable 'French,' or 'Florida Rough' lemon. Strange as it may seem, there are still persons in South Florida who cling, like the dog to the proverbial bone, to the belief that marketable lemons cannot be produced in Florida, but they are within the last ten years comparatively scarce, and there as few now, except the veriest of backwood's 'crackers,' who do not have at least one or two pet Fenvas or Villa Francas in the yard, and still others set out twenty trees, and this man one hundred, and that man five hundred, and so on.

Lemon culture has thus far received the most attention among the progressive fruit growers of the 'lake region' of Florida, though lemons are cultivated to a certain extent all over the peninsula of Florida, and to a slight extent in lower Louisiana, especially in the parish if Plaquemines, where the commercial lemons are now receiving some attention. Florida is indebted to Mr. Bidwell and General Sanford for the first importation of the five varieties of commercial lemons now attracting so much attention. A

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<sup>8</sup> U. P. Hedrick, *A History of Horticulture in America to 1860*, (New York, Oxford University Press, 1950), p. 121.

<sup>9</sup> *Ibid.*, p. 120.

<sup>10</sup> Louisiana Agricultural Experiment Station, *Horticulture, Results of the Year 1893*. (Baton Rouge, 1894), pp. 878-79.

<sup>11</sup> Hedrick, *op. cit.*, p. 297.

great part of General Sanford's large grove at Belair is planted to those lemons, and although it has several times suffered severely from cold, the trees are very healthy and thrifty. On the lower range of keys, so many of which are adapted to the culture of the lime and lemon, none of the fine varieties are yet known, but the knottiest, smallest Florida lemons and limes are grown for the Key West market.

One cause, and a just one, of the bad name which Florida lemons have had in the Northern markets, has been the indiscriminate shipment in years past (and in some cases it is still continued) of the inferior lemons so abundant in Florida.<sup>12</sup>

The same report listed no less than thirty-one varieties of lemons growing in Florida at this time. This, in part, accounts for some of the difficulties encountered in marketing the crop. In addition, many of these were seedling plants which added to the heterogeneous quality of the crop. The major advantage enjoyed by the Florida lemon industry was that most of the fruit was picked and marketed in the latter part of August and during September and October when shipments from overseas were light.<sup>13</sup>

The great freezes of the winter season in 1894-1895 eliminated Florida as a major lemon-producing area. From a peak production of 57,219 boxes in the 1893-1894 season, lemon production fell to 713 boxes in the 1894-1895 season and to zero in the 1895-1896 season. In the years following, the highest production attained was a meager 2,200 boxes during the 1898-1899 season.<sup>14</sup>

Severe freezes had previously affected the Florida citrus industry in 1879-1880, 1883-1884 and 1885-1886.<sup>15</sup> Most growers became convinced of the inadvisability of trying to grow lemons under such conditions.

In addition, other problems existed which operated to prevent the re-establishment of the industry in Florida. Citrus scab had disfigured much of the fruit, making it unmarketable. Curing the fruit was difficult under the hot and humid climatic conditions in Florida. Various fungus growths resulted in great loss because of fruit rot.<sup>16</sup> For these reasons, Florida and other areas in the Gulf Coast region passed out of the picture as centers of commercial production of lemons after 1895.

#### BEGINNINGS OF COMMERCIAL PRODUCTION IN CALIFORNIA

The first plantings of citrus in the American Southwest were at the Spanish missions in Arizona between 1707 and 1710, and it is known that the lemon was growing in Baja California as early as 1739.<sup>17</sup>

It is possible that lemons were first grown in Alta California at the

<sup>12</sup> *Report on the Condition of Tropical and Semi-Tropical Fruits in the United States in 1887* (Washington, Government Printing Office, 1891), pp. 80-81.

<sup>13</sup> T. W. Moore, *Treatise and Handbook of Orange Culture in Florida, Louisiana and California* (New York, E. R. Pelton and Co., 1892), p. 116.

<sup>14</sup> *Report of the California State Board of Agriculture. 1911*, (Sacramento, 1912), p. 140.

<sup>15</sup> Herbert J. Webber, "The Two Freezes of 1894-95 in Florida and What They Teach," in *Yearbook of the U. S. Department of Agriculture—1895*, (Washington, Government Printing Office, 1896), p. 159.

<sup>16</sup> Herbert J. Webber and others, *The Citrus Industry, op. cit.*, I, pp. 590-591.

<sup>17</sup> *Ibid.*, p. 32.

San Diego Mission. Evans, writing in 1874, made the following statement concerning the planting of citrus at some of the other missions:

Although the only living orange-trees planted by Father Junipero and his associates, or their immediate successors, are to be found in the mission gardens at San Gabriel, in Los Angeles County, and at Old San Bernardino, in San Bernardino County, there are traditional evidences of orange groves having been planted by them and flourishing at the mission settlements of San Louis Rey and San Buenaventura, which disappeared with the decay of those venerable institutions.<sup>18</sup>

General Vallejo is quoted as saying that he remembered lemons growing at Monterey and at San Gabriel in 1822.<sup>19</sup> In 1849 Bryant observed lemons growing at the San Fernando Mission.<sup>20</sup> The California State Agricultural Society reported, in 1858, lemons growing at San Gabriel and San Luis Rey<sup>21</sup> and Brewer bought lemons at Mission San Gabriel in December, 1861.<sup>22</sup> Some of the other missions undoubtedly had plantings of lemons. Seeds and plants were carried from these mission plantings by a relatively small number of the early ranchers and farmers.

Following the discovery of gold in California the influx of population resulted in a greatly increased demand for food of all kinds. The demand for an acid fruit was met by imports of lemons and limes from Europe and by an increased production of both these fruits within the state.

Prior to 1848 there had been little planting of citrus in the northern counties since most of the Spanish settlement had occurred to the south of the San Francisco Bay area. During the 1850's and early 1860's commercial plantings in these northern counties remained few in number for several obvious reasons. First of all, most of the people were engaged in a search for gold and were not interested in agriculture. Secondly, a large percentage of the gold miners came from the eastern part of the United States and from Western Europe and had no background in citriculture.

However, many people planted the seeds of fruit purchased for home consumption, and, as a result, citrus plantings were eventually made in many parts of the state. An example of how this was accomplished is found in an article on orange culture in California which appeared in *The Overland Monthly*. It quoted Dr. F. Strentzel of Martinez as follows:

My efforts in orange culture date from the year 1853, when I bought some large and fine-flavored oranges and a few Sicily lemons in San Francisco, planted the seed in boxes, and raised them in my tent home. They grew luxuriantly, more so indeed than any I have planted since. The young trees transplanted to the orchard nursery, even with the best shelter and

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<sup>18</sup> Taliesen Evans, "Orange Culture in California," *The Overland Monthly*, 12 (March, 1874), p. 236. Most of the early writers used the term "orange grove" to refer to any citrus planting. Most orange groves included oranges, limes and lemons.

<sup>19</sup> Byron M. Lelong, *A Treatise on Citrus Culture in California* (Sacramento, State Printing Office, 1888), p. 77.

<sup>20</sup> Edwin Bryant, *What I Saw in California*, (New York, D. Appleton & Co., 1849), p. 390.

<sup>21</sup> *Transactions of the California State Agricultural Society, 1858*, (Sacramento, 1859), p. 293.

<sup>22</sup> Wm. H. Brewer, *Up and Down California in 1860-64*, edited by F. P. Farquhar (Berkeley, University of California Press, 1949; 2nd ed.), p. 22.

care I could afford, were nipped by the frost for several winters, and thus retarded in their growth.<sup>23</sup>

Most of these early citrus plantings in northern California were incidental to home adornment and ornamentation. So far as there was a home or local demand there was production, but not much more.<sup>24</sup>

Even Southern California with its Spanish heritage and its mission plantings of citrus had only a small commercial industry. Governor John Downey, writing in 1874, explained this fact as follows:

It was a difficult undertaking for the rancho to build a fence to protect his orchard from the multitude of wild stock that surrounded him, even to the door of his pueblo home.<sup>25</sup>

This first citrus planting of any size was at Mission San Gabriel about 1805.<sup>26</sup> A few other plantings followed several decades later. The orchard at San Gabriel was fairly mature when Luis Vignes made his first plantings in the early 1830's.<sup>27</sup> Shortly thereafter plantings were made within the city limits of Los Angeles by Alonzo Wolfskill and Manuel Requena.<sup>28</sup>

The groves of Vignes, Wolfskill, Requena and other early orchardists of Southern California in no way resembled a present-day horticultural enterprise. These men were interested in determining precisely which species and varieties of fruit would do best in a given locality. As a result, their orchards contained a little of everything. During this early period the grape appeared to be the most profitable fruit crop. Wine could be easily shipped to the gold fields and around the Horn to the East Coast.

Some idea of the composition of these orchards can be gained from the descriptions found in the book, *Semi-Tropical California*. The number of trees contained in several of the orchards are given below:

Mrs. H. Shaw's holdings on San Pedro Street in Los Angeles consisted of thirty-five acres on which were planted the following:<sup>29</sup>

2,500 young orange and lemon trees	200 apple trees
1,000 young lime trees	20 walnut trees
200 bearing orange trees	20 peach trees
20 lime trees	20 almond trees
20 Sicily lemon trees	200 grape vines
300 apricot trees	4 acres of strawberries and small fruits.

<sup>23</sup> Evans, *op. cit.*, p. 238.

<sup>24</sup> H. Latham, "Fruit Growing in California," in *Transactions of the California State Agricultural Society During the Year 1885* (Sacramento, 1886), p. 185.

<sup>25</sup> John G. Downey, "More About Orange Culture," *The Overland Monthly*, 12 (June, 1874), p. 560.

<sup>26</sup> William A. Spalding, *The Orange: Its Culture in California*, Riverside Press and Horticulturalist Steam Print, 1885), p. 7.

<sup>27</sup> Spalding says that this grove was planted in 1834. Newmark indicates that Vignes came to Los Angeles in 1829 and planted his first orchard shortly thereafter. Davis reported that Vignes was the first man to raise oranges in Los Angeles and that Vignes was well established by 1833. [Spalding, *op. cit.*, p. 7; William H. Davis, *Sixty Years in California* (San Francisco, A. J. Leary, Publisher, 1889), p. 169; Maurice Newmark and Mareo R. Newmark, *Sixty Years in Southern California* (Boston, Houghton Mifflin Company, 1930), p. 197.]

<sup>28</sup> Downey, *op. cit.*, p. 560.

<sup>29</sup> Ben C. Truman, *Semi-Tropical California* (San Francisco, A. L. Bancroft & Co., 1874), p. 49.

An orchard of fifty acres lying on the south side of Main Street in Los Angeles had:<sup>30</sup>

300 bearing orange trees	50 apricot trees
100 bearing lemon trees	50 nectarine trees
300 lime trees	1,000 apple trees
500 young orange, lemon and lime trees	300 pear trees
100 Italian chestnut trees	200 peach trees
300 walnut trees	500 almond trees
25 fig trees	10,000 grape vines.

Most of the land holdings within the City of Los Angeles were of less than fifty acres in extent and contained just such a variety of crops as indicated by the preceding examples. However, along the foothills to the east of the city lay the San Gabriel fruit belt, an area about two miles wide and ten miles long. Here were a number of large land holdings. Among these, that of Don Benito Wilson was the largest. The original estate contained 1,800 acres, and at the time that Truman visited the orchard it had the following:

231,000 grape vines	600 lime trees
2,050 bearing orange trees	500 olive trees
1,950 young orange trees	450 walnut trees
500 lemon trees	

In the 1870's the bulk of California's citrus production was from Los Angeles County, but plantings were being made in outlying districts. Frank A. Kimball had planted a grove of oranges and lemons at National City, San Diego County, 1869.<sup>32</sup> Lemon trees were imported from Australia in 1875 and were planted by Judge J. W. North in the Riverside area.<sup>33</sup> Lemon trees of the Lisbon variety were first planted on the La Patera Ranch near Goleta, Santa Barbara County, in 1875.<sup>34</sup> In addition, lemon plantings were being made in many other parts of California at this time. However, before any large-scale commercial development occurred, a number of production and marketing problems had to be overcome.

#### FACTORS IN THE GROWTH OF THE CALIFORNIA INDUSTRY

While the discovery of gold and the ensuing rapid increase in population had created a demand for citrus fruit in the state, the California lemon-growing industry had remained relatively small. This has generally been attributed to competition from foreign fruit and the limited size of the West Coast market. During the early days of the industry, foreign lemons often

<sup>30</sup> *Ibid.*, p. 52.

<sup>31</sup> *Ibid.*, p. 125.

<sup>32</sup> "Colorful Early Days of California Citrus Industry," *The California Citrograph*, 17 (June, 1932), p. 317.

<sup>33</sup> *Citrus-Fruit Improvements: A Study of Bud Variation in the Lisbon Lemon*, by A. D. Shamel, L. H. Scott, C. S. Pomeroy and C. L. Dyer, U. S. Department of Agriculture, Bureau of Plant Industry, Bulletin No. 815 (Washington, 1920), p. 3.

<sup>34</sup> D. M. Rutherford, "Citrus Progress in Santa Barbara County," *The California Citrograph*, 38 (October, 1952), pp. 488-490.

sold for five to six dollars a box while California lemons for one dollar a box.<sup>35</sup>

Most of the lemon trees planted in California at this time were seedlings of local and inferior varieties. The fruit was allowed to remain on the trees until ripe with the result that the lemons became large and coarse textured. The fruit produced only small quantities of a bitter juice with a low acid content.

Some of the pioneer lemon growers reasoned that greater uniformity in fruit was needed. This was achieved with the importation of Lisbon lemon trees in the 1870's and the development of the Eureka variety about the same time. By 1880 it was generally accepted that these two varieties were the ones best suited for California.<sup>36</sup> Better cultural practices including grafting methods ensured the propagation of trees capable of producing high quality fruit.

Important, also, in this matter of producing and marketing a high quality product was the development of marketing associations which picked, packed and sold the fruit. The first such group was the Lemon Growers Exchange of Upland formed in 1893.<sup>37</sup> Other groups formed soon thereafter, and by 1897 an organization known as the Lemon Growers Advisory Board began operating in the Southern California Fruit Exchange.<sup>38</sup> Eventually these grower associations were able to standardize the California product and to control the number of lemons made available for sale as fresh fruit. Thus, they have been able to regulate the selling price of lemons in the grocery stores of the nation.

Completion of the transcontinental railroads in the 1880's had opened eastern markets to California fruit, but even this was not enough to permit California lemon-growers to capture a significant portion of the market.<sup>39</sup> However, competition among the railroads led to lower freight and passenger rates to and from California. Prior to 1885 it cost as much as \$1000 to ship a carload of produce to Chicago. Early in 1885 this dropped to \$400 a car. With the completion of the Santa Fe the freight rate between Los Angeles and Chicago fell to \$200 a car.<sup>40</sup>

In spite of the lower freight rates foreign fruit could be delivered to the major eastern cities at a lower cost than could California fruit. Table 3 shows the freight rate advantage enjoyed by imported fruit in the eastern markets.

To combat this economic advantage the California growers fought successfully for tariff protection, and import duties of varying amounts have been placed on lemons. The Act of July 24, 1897 increased the rate on lemons from about one-half cent a pound to one cent a pound. Further increases in the tariff occurred in 1913 and 1930 with the rate on lemons

<sup>35</sup> G. W. Garcelon and B. M. Lelong, *Citrus Fruits* (Sacramento, 1891), p. 6.

<sup>36</sup> Lelong, *op. cit.*, pp. 73-77.

<sup>37</sup> R. O. Price, "History of Upland's Lemon Association," *The California Citrograph*, 2 (April, 1916), p. 11.

<sup>38</sup> *The California Citrograph*, 2 (March, 1916), p. 1.

<sup>39</sup> The Central Pacific route was completed in 1869 and extended south to Los Angeles in 1876. In 1881 the Southern Pacific was completed from Los Angeles to New Orleans. In 1885 the Santa Fe route to the East was finished.

<sup>40</sup> Latham, *op. cit.*, p. 185.

reaching two and a half cents a pound in the latter year.<sup>41</sup>

TABLE 3

Rates on California and Italian Lemons to New York, Pittsburgh, Cincinnati, and Chicago. (Carload lots—1911)

DESTINATION	Per Cwt.			Per Box		
	Calif.	Italy	Difference in favor of Italy	Calif.	Italy	Difference in favor of Italy
New York, N.Y.	\$1 00	*\$0.358	\$0.642	\$0.84	\$0.304	\$0.536
Pittsburgh, Pa.	1.00	* 0.658	0.342	0.84	0.559	0.281
Cincinnati, O.	1.00	* 0.758	0.242	0.84	0.644	0.196
Chicago, Ill.	1.00	* 0.758	0.242	0.84	0.644	0.196

Source: G. Harold Powell, *The California Lemon Industry*, p. 21.

\* Based on rate of 30.4 cents per box of 85 pounds to New York and not including transfer charge in New York of 3 cents per box. From the 30.4 cents rate a rebate of 6 cents should be deducted on all lots of Italian lemons of 1,000 boxes or over.

With a superior product, an able marketing organization, and with tariff protection the California lemon-growing industry has been able to control the American market since 1930 and now sells about five per cent of its crops to foreign countries. The only threat to its preeminent position is the never-ending spread of the city, as factories, sub-divisions and shopping centers consume more and more prime agricultural land around the Southern California megalopolis.

<sup>41</sup> G. Harold Powell, *The California Lemon Industry* (Los Angeles, The Citrus Protective League, 1913), p. 13. For small lemons \$1.50 a thousand would mean a tariff of about one cent a pound. However, for the average lemon this tariff averaged about one-half cent a pound.