

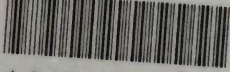
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California. State Market
Commission.

Asparagus in California.

1916

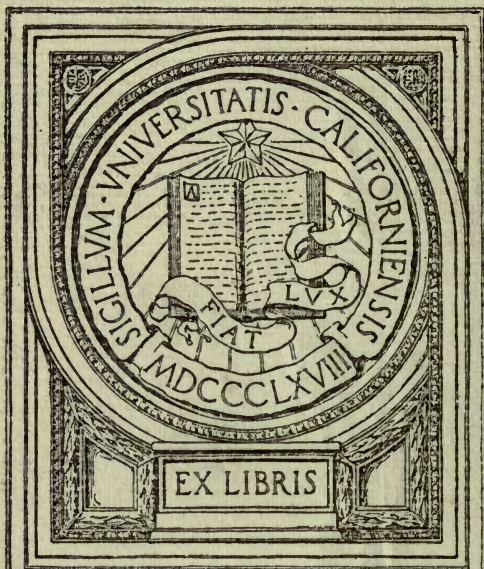
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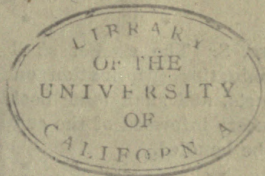
Asparagus in California

THE CULTURE, MARKETING
PROBLEMS AND HISTORY

COMPILED UNDER THE DIRECTION OF THE
STATE MARKET DIRECTOR

BY

W. F. BAILEY



CALIFORNIA
STATE PRINTING OFFICE
1916

SB325

MAJORITY LIBRARY-AGRICULTURE DEPT. B3

E. J. Mickson

Abstracts from Assembly Bill No. 318 (Chapter 713), approved June 10, 1915, being:

An act to provide for the creation of the State Commission Market, and the organization thereof, to carry on the business of receiving from the producers thereof, the agricultural, fishery, dairy and farm products of the State of California and selling and disposing of such products on commission, creating the "State Commission Market Fund" and appropriating money therefor.

SECTION 1. There is hereby created the State Commission Market, a state organization, to carry on the business of receiving from the producers thereof, the agricultural, fishery, dairy and farm products of the State of California and the selling and disposing of the same on commission, as herein provided.

SEC. 2. The State Commission Market shall be under the management and control of a governing body of one person, to be known as the State Commission Market Director, who shall be appointed by the Governor of the State of California.

SEC. 3. The Commission Market Director shall establish and maintain in any and all cities and towns in the State where and when the conditions are in his judgment most suitable, depots or stations to be used as commission markets, for the receiving, care, sale and distribution of the agricultural, fishery, dairy and farm products of California, and the director shall establish and maintain an executive office or headquarters at Sacramento.

* * * * *

SEC. 5. All producers of agricultural, dairy or farm products, or products manufactured or processed therefrom, or fishery products, which shall have been grown, raised, produced, processed or manufactured within the State of California, or caught in the territorial waters thereof, shall have the right to consign and deliver such products to the State Commission Market, at any of its depots or branches, for sale and distribution.

SEC. 6. The State Commission Market shall receive and care for all produce consigned and delivered to it under the provisions of this act, and shall sell and distribute to dealers, consumers and all buyers such products to the best possible advantage of the producer; and, to the end that the State Commission Market be self-supporting, shall charge a commission for the handling of all products in an amount which in the judgment of the director is just and reasonable. All settlements with producers shall be made once a month or oftener, and the market shall retain the commission charged.

* * * * *

SEC. 8. The market shall have a bureau of correspondence for gathering and disseminating information on all subjects relating to the marketing of California products, and shall issue booklets thereon, and by every practicable means keep the producers informed of the supply and demand and at what market their products can best be handled.

* * * * *

SEC. 16. The director shall make and submit to the Governor, on or before the first day of December of each year, a report containing a full and complete account of its transactions and proceedings for the preceding fiscal year, together with such other facts, suggestions and recommendations as may be deemed of value to the people of the State.

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ASPARAGUS IN CALIFORNIA.

Introduction. The introduction of asparagus into California as a commercial proposition dates back to the early 'seventies. No records of its early history in this State are available. It commenced to be mentioned in the market reports in 1875.

Originally the "green" varieties were the only ones known; in fact, the "white" is a California evolution, an improvement on the "Eastern green." This development was the result of efforts made by the California canneries to find a stalk that would be less liable to bruises and abrasions in the canning process. General report credits the experimental work that brought about the discovery of the new variety to Mr. R. Hickmott, the pioneer asparagus canner, of whom further mention is made in the section on canning.

The first attempts to raise asparagus on a large scale in this State were made at Milpitas, Santa Clara County. The fields in the Sacramento and San Joaquin delta date back to 1890-95. While asparagus does fairly well in all parts of the California lowlands, it is on the formerly overflowed and reclaimed lands of the Sacramento and San Joaquin delta that it does its best. It is here that asparagus seems to find the most congenial soil and climate. In no other place in the world has it thus far been possible to equal the production of this section, either in quality or quantity. Nowhere else in the West is it grown to any great extent. The output from fields in other localities is incidental to and in connection with truck gardening for local consumption.

In the triangle between the cities of Sacramento, Stockton and Benicia, there are approximately 35,000 acres devoted to its growth. These lands, as previously stated, were formerly overflowed lands, covered during the spring floods, and locally known as "tule lands," being considered almost worthless. In the last thirty years, reclamation work has resulted in levees that protect them from overflow and in their being drained and otherwise improved, so that today the raw unplanted land is worth \$150 to \$300 an acre. Nearness and accessibility to river frontage and canneries are the principal factors in determining the values.

As a rule the land is owned by Americans—whites of American birth or long residence. They seldom farm it themselves, the work being of a character that does not commend itself to the class owning the land. Most of the asparagus land is worked by tenants.

Two systems of leasing are in vogue. One, the "long time" lease, covering six to ten years, is on the basis of a cash rental, ranging from \$16 to \$30 per acre, and averaging \$22.50 per acre per annum. The tenant usually plants his asparagus and his lease covers the life of the plant, or at least the period of its greatest production. The holders of these long-term leases are mostly Portuguese, who lease the bare land, furnishing their own tools and other equipment.

The other system is that of annual leases on a percentage basis, under which the lessee and the owner divide the returns on 50 and 50 to 67 and 33 per cent, respectively—the determining factor being the furnishing of

necessary equipment, such as draft animals, tools, gathering and shipping boxes, etc. Thus, for a division of 50 and 50, the owner would furnish everything but the necessary labor and its keep, while on a 67 and 33 percentage basis the tenant would furnish everything. Most of these short-term lessees are Orientals, the proportion running Japanese, 50 per cent; Chinese, 30 per cent, with Portuguese making up practically all of the remaining 20 per cent.

The actual field labor is also largely Oriental, ranging, Japanese, 50 per cent; Chinese, 30 per cent, and Hindoos, 10 per cent, with a sprinkling of Filipinos, Kanakas, Mexicans and Portuguese. There is, however, a growing disinclination to the employment of Japanese, either as lessees or laborers; they are seldom employed in the latter capacity, except by their own countrymen, if other laborers can be obtained.

Culture. As a rule asparagus is raised from plants one and two years old, grown in nurseries, though there have been cases of successful fields where the plants were grown from seed direct. It requires about 4,000 plants to the acre. These cost from \$3.50 to \$4 per thousand. They are put in rows 7 feet apart and 14 to 18 inches apart in the row.

The soil needs to be thoroughly prepared—deeply plowed and well harrowed. Freedom from weeds is essential. Irrigation is not required, as the crop is harvested before the moisture is out of the ground, it being conserved by frequent cultivation. When the asparagus season approaches, the fields are plowed into ridges, burying the plants to a depth of from 12 to 20 inches. The hollows between the ridges are kept mellow by being frequently disced. The harvest, or cutting season, commences about the first of March and lasts until about the first of July. Weather conditions have a great influence, not only on the time when the season opens, but also on the character and quantity of the yield, more especially during the earlier part of the season. The fields are gone over daily. The sprouts, 6 to 9 inches long, are cut as soon as the tip appears above ground. A shovel-shaped tool about 2 inches wide at the cutting end and about 2 feet long, with a wooden handle, is used in cutting, which is done 5 to 8 inches below the surface.

If the sprouts are allowed to remain uncut and exposed to the sun and wind, they deteriorate very rapidly and lose not only the blanched or white appearance, but also lack weight and flavor and become tough or woody. Twenty-four hours exposure gives a decided green tinge to the shoots, which in that length of time will be 4 to 6 inches above ground. This loss in color is a detriment in marketing, the demand being for a pure white stalk. There is, however, a tendency toward a stalk with a slight tinge of green, and in fact some connoisseurs claim that the exposure to the air which gives the green tinge imparts a finer flavor and makes it preferable to the pure white.

As soon as cut the sprouts are gathered and hauled off the field, care being taken to avoid, so far as practicable, exposure to the sun and wind. They are taken to the washing shed and washed to remove all soil; then they are arranged with heads together, trimmed to a uniform length of 7 inches, neatly arranged in two layers in "lug" boxes and are ready for shipment to the market.

Each lug box contains a net weight of from 45 to 50 pounds, their gross weight, including a temporary cover, being about 12 pounds higher. These lug boxes constitute the unit in general use in California, although there are some small boxes containing 30 pounds and a large one that holds 60 pounds. The standard box is the one holding from 45 to 50 pounds. Shipments to the canneries, being loosely packed, run 45 pounds; those going to the markets approximate the higher amount.

The asparagus stalks in a well-tilled field will run about as follows, as to size:

inch and under (in diameter)-----	30 per cent.
to $\frac{1}{2}$ inch (in diameter)-----	50 per cent.
Over $\frac{1}{2}$ inch (in diameter)-----	20 per cent.

It is not customary to attempt to segregate the stalks by size or to otherwise grade the asparagus for the market. Shipping according to the run of the field is the rule.

Field laborers are paid 70 cents per hundred pounds or 30 cents a box for cutting. Those engaged in hauling, washing, boxing, etc., receive \$30 to \$45 per month and "found."

The production runs from nothing the first year to 25 to 50 boxes per acre the second, 50 to 100 the third and 100 to 150 thereafter, up to the eighth or ninth year, when the plants begin to run down and lose their virility. As a rule the canneries will not accept asparagus cut from fields nine years old and over, though it is not unusual for fair asparagus to be obtained for three or four years longer. The stalks, however, deteriorate after nine years, being both smaller and tougher, and not infrequently develop a tendency to bitterness.

It has been found that the San Joaquin delta lands produce but 60 per cent as much as those of the Sacramento delta. The San Joaquin section has a lighter soil with more humus than the Sacramento soils, which are heavier and are more sedimentary, partaking of the nature of adobe.

It may be noted in this connection that scientific observation has resulted in the division of asparagus plants into "male" and "female." The male is the more vigorous grower, more productive and of longer life than the female. This distinction is now recognized by the practical growers, who resort to the "female" plant for their seeds.

There are two enemies of asparagus that are to be feared. These are the asparagus beetle, a European importation, and rust, a fungous growth that turns the sprouts to a rusty brown and renders it unfit for consumption. Fortunately both of these pests are easily controlled under modern culture methods and neither of them have any foothold in California. This is probably due to the vigilance of the growers. Twenty years ago a large acreage in asparagus near Milpitas became infected with rust, with the result that the growing of asparagus in that vicinity was abandoned.

History. According to the botanist, asparagus is a member of the liliaceous family of plants, of which there are about 1,000 members, including the lily, violet, onion, etc. They also tell us that it is one of a

genus of 150 species, a perennial herb, native to the temperate regions of Asia, Europe and especially Great Britain.

The Century Encyclopedia states the presumptive origin to have been Persia, but in this it stands alone, as other authorities agree on its European nativity.

The word "asparagus" comes from the Greek, its derivation being unknown. Until within the last hundred years its English name was sparrow-grass or sparegrass, the presumption being that this name was due to the fondness of sparrows and other birds for the seeds, when ripe. In Italian it is known as *Sparagi*, practically the same name by which it was known in the days of the Cæsars. In French it is *Asperge*, and in Spanish *Esparrago*.

Its history has been traced back 2,000 years. It was known to the Greeks and is mentioned in their writings. Frequent reference is made to it in early Roman literature. Cato, about the beginning of the Christian era, wrote at considerable length as to the proper method of its cultivation. Another writer (Pliny) at about the same period gave his opinion that it was worthy of the gardener's most careful consideration. Thirteen hundred years ago it was mentioned as a certain cure for toothache.

There are numerous varieties. A bulbous species is cultivated in China and Japan, where its roots or bulbs are considered a great delicacy. This variety is now under trial cultivation by the United States Acclimatization Station, with a view of testing its value as a food plant. Other varieties are cultivated for their beauty, such as the well-known asparagus fern. Another variety, closely resembling the ordinary or edible, is extremely bitter.

The common, or *Asparagus officinalis*, is the only variety used as food in America or Europe. This has been developed from its original wild form, in which "the sprouts are the size of a goose-quill and the plants a foot high," to sprouts averaging half an inch in diameter and in some plants as much as an inch and a half; full-grown plants four feet high are not uncommon in California fields.

As mentioned above, asparagus is a native of the temperate regions of Asia and Europe, its favorite habitat being the banks of streams, the seaside and marshes. It has been found on the steppes of Russia, growing so luxuriantly as to drive out other vegetation and providing a forage for cattle, who eat it with avidity. On the English coasts it has been found growing among the cliffs where there was but little soil. It can be said to have, in its wild condition, a decided predilection to sandy soil where there is an excess of moisture.

Apparently there is no record of the introduction of asparagus into America; yet introduced it must have been, as it is not indigenous here. It evidently must have been brought over at a very early date, presumably by English colonists, as it is mentioned as one of the English vegetables that were doing well in the Virginia plantations in 1649.

While not nearly so generally used as some of our vegetables, it is universally known and grown in every part of the country. Its use is on the increase, an important factor in bringing this about being the great improvement that has resulted from the methods of growing in vogue in California, and the high grade of the output from the State, both fresh and canned.

Food Value and Chemical Analysis. A chemical analysis of the fresh asparagus stalks shows the following component factors:

Edible shoots	Per cent	Ash	Per cent
Water -----	93.0	Potash -----	31.0
Fat -----	0.3	Soda -----	12.0
Sugar -----	0.4	Lime -----	10.0
Cellulose -----	2.3	Magnesia -----	5.0
Nitrogenous matter -----	2.0	Iron oxide -----	3.0
Nonnitrogenous matter -----	1.3	Phosphoric acid -----	20.0
Ash -----	0.7	Sulphuric acid -----	6.0
		Silica -----	13.0
	100.0		100.0

This evidences that the general impression as to the great food value of asparagus is erroneous. In fact it is of but secondary value, but coming as the first spring vegetable, when the system and appetite demand fresh foods, it fills a demand and its use should be encouraged. In its cooked condition it is extremely easy and quick of digestion.

Another use of asparagus is in the production of a fermented alcoholic beverage known as "asparagus gin." This is a new industry recently introduced in California. The fresh stalks are used in the process. Some 50,000 pounds were used in this way in 1915. In Europe a beverage having some of the characteristics of coffee is made from the ripe asparagus berries. So far as known, the process has not been tried in this country.

For many years and until comparatively recently, the roots, sprouts and berries were held to have valuable medicinal properties. The roots were used as an aperient and the sprouts and berries as a diuretic. A crystalline substance called "asparagine" was obtained from the plant and widely used by the medical profession in diseases of the urinary organs. Its use is no longer recognized by the profession, as other specifics have proven of greater value.

Production in California. Asparagus can be grown in every county in California, and it should be a factor in the "truck patch" of every farmer and suburban resident in the State, not only as a valuable addition to the food resources, but also on account of the ease of cultivation and good returns it gives for the small amount of space and labor it requires.

Commercially it is grown as an adjunct to a majority of market gardens, the output being marketed locally. No records are available of this production, but in the aggregate it amounts to considerable.

In the Imperial Valley quite a large acreage has been planted to asparagus of the green or palmetto variety. As yet these fields are not in full bearing, although a considerable quantity from that locality is shipped both to southern California and to eastern markets. Its season begins about ten days earlier than that of northern California. There seems to be no disposition to raise cannery stock—that is, the white varieties—presumably owing to the absence of any canneries to utilize the output. As yet the production has not assumed proportions sufficiently large to warrant specializing in railroad and express companies records, and consequently no figures are available as to output.

The great production of the State comes from the delta regions of the Sacramento and San Joaquin rivers. Here some 35,000 acres are devoted to asparagus culture.

The known production of asparagus in California for the season of 1915 was approximately as follows:

	Pounds.	Pounds.	Per cent.
Received at San Francisco-----	18,802,800		
Less canners' purchases, San Francisco -----	6,749,400		
Less shipped from San Francisco -----	2,292,400		
	<u>9,041,800</u>		
		9,761,000	16.5
Freight and express shipments to State points-----		1,060,000	1.8
Freight and express shipments to Eastern points-----		9,000,000	15.1
Absorbed by canneries-----		39,670,405	66.6
		<u>59,491,405</u>	100

This production netted the growers about $2\frac{7}{10}$ cents per pound, or \$1,600,000, the greater part of which came from points outside of the State as representing consumption of Eastern shipments and the canned product, most of the latter being shipped out of the State.

Production has just about kept pace with the consumption. The demand for both the fresh and canned is susceptible of almost unlimited growth. With systematic promotion the demand can readily be greatly increased, as can also the acreage and production.

Eastern Shipments. The Eastern market demands a green asparagus and the bulk of shipments are accordingly made of the palmetto or green variety.

Eastern Shipments of California Asparagus for the Season of 1915.

	In carload lots		In mixed carloads	
	Number of cars	Pounds	Number of cars	Pounds
By express -----	72	1,440,000	4	80,000
By freight (refrigerated)-----	357	7,140,000	17	340,000
Totals -----	429	8,580,000	21	420,000
Grand total—450 cars; 9,000,000 pounds.				

	Destination (pounds)	
	Chicago	New York
Express shipments -----	152,000	1,368,000
Freight shipments -----	1,496,000	5,984,000

The first shipment of the season reached New York February 25th and was sold at \$15 to \$20 per dozen bunches of 2½ pounds each. This shipment was the first asparagus in the Eastern market, outside of a very insignificant quantity grown under glass.

In 1915 asparagus from South Carolina appeared in the New York market during the week of March 12th; shipments from Georgia, the next earliest, during the week of March 27th. With their appearance the price of California asparagus was forced down, although it is much preferred over its competitors. The season in New York lasted until the end of April, when locally-grown asparagus came into the market. [See Appendix D for market quotations.] The prices in the New York market ranged from 83 cents a pound (paid for the best of the first shipment reaching there) to 7 cents on a "poor lot" sold during the week of March 27th. The average prices were 42 to 27 cents a pound, according to quality.

Eastern shipments are made in "cones," wooden boxes with a capacity of 12 bunches or 30 pounds net; frequently, when not bunched, they contain but 26 pounds. A supply of damp moss is put in the bottom of the cone and waxed paper around the sides, which are several inches higher than the stalks are long, so as to protect them. The butt end is packed down so as to be in contact with the damp moss, to retain the freshness of the asparagus.

Shipments are made from Sacramento, Walnut Grove, Antioch and San Francisco.

Market Conditions at San Francisco. During the season of 1915 there were received at San Francisco 321,048 boxes of asparagus, containing approximately 16,052,800 pounds. This was brought from points on the Sacramento, San Joaquin and Mokelumne rivers by steamboats of the three established lines, *i. e.*, Southern Pacific Company, California Transportation Company and California Navigation Company.

Approximately 5,000 boxes were shipped from the San Joaquin section of the delta to one of the San Francisco canneries by rail. There were also 60,000 to 70,000 (say 65,000) boxes brought from points on the Sacramento and San Joaquin rivers to Oakland direct, these shipments being divided between the retail market and canneries in Oakland.

The prevailing freight rate is 8½ cents per box, with an added charge of 1 cent for returning boxes empty. This indicates that the business is worth some \$40,000 per annum to the transportation companies.

In addition to the above there is some locally-grown asparagus brought into the city from points in Alameda County, notably Bay Farms Island, and points on the "Peninsula," but these in the aggregate are a negligible quantity and are absorbed by the local dealers.

The San Francisco market absorbs daily from 1,500 boxes, during the earlier part of the season, to 1,000 after the novelty has worn off. The cities of Oakland, Berkeley, Alameda and San Jose take from 1,200 to 800 more, the receipts over these figures being divided between the canneries located in the city and the commission and jobbing houses which do a shipping trade. Actual figures as to the division of the 1915

receipts are not available, but the following estimate is thought to closely approximate it.

	Boxes	Pounds	Per cent
Retail trade, San Francisco.....	120,000	6,000,000	32
Retail trade, Oakland, etc.....	72,000	3,600,000	19
San Francisco and Oakland canneries.....	134,988	6,749,400	36
Re-shipped and through shipments.....	45,848	2,292,400	12
"Dumped"	3,202	161,000	1
Totals	376,038	18,802,800	-----

Thus it will be seen that the retail trade of San Francisco and vicinity during the season of 1915 absorbed 51 per cent of the shipments to that point, or some 9,600,000 pounds of asparagus.

[For range of prices see Appendix A.]

According to the books of one of the largest handlers of asparagus in San Francisco, the season of 1915 business, as handled, averaged as follows:

Received by growers.....	2½ cents per pound
Handling charges	½ cent per pound
Wholesale price	3 cents per pound

These handling charges include 10 per cent commission, freight charges of 8½ cents per box on asparagus received, one cent per box for returning same empty and 2½ cents per box for drayage from dock to commission house or jobber. There are some firms who charge against the grower ½ cent a box drayage for returning empties to the dock, but it would seem that the general practice is to include this in the 2½ cent charge for drayage from the dock.

The retail price varies according to class of stores and consumers. It is cheapest in the Chinatown and North Beach districts, next cheapest in the Mission and the large Market street markets, and highest in the outlying districts and the stores catering to the "gilt-edge" trade, in the order named. Retail figures for 1915 are not available, but using one day of the present season (March 28, 1916), the actual figures were as follows:

Market (wholesale) quotations.

\$1.25 to \$2.50 a box, with 5 to 5½ cents a pound for Fancy or Graded.

Retail prices (average of 16 stores) per pound:

Fancy, 8 1-10 cents; Field Run, 7 6-10 cents; Low Grade, 5 cents. Range of prices from 10 cents to 3¼ cents.

This gives the following averages:

	Per box.	Cents per pound.
Received by grower.....	\$1.680	3.36
Freight to San Francisco.....	.095	0.19
Drayage025	0.05
Commission merchant 10 per cent.....	.200	0.40
Wholesale price	\$2.000	4.00
Added by retailer.....	1.300	2.60
Retail price	\$3.300	6.60

In other words, of the dollar paid by the consumer for asparagus on that date, 50 cents went to the grower, 4 cents to the transportation and drayage companies, 6 cents to the commission merchant and 40 cents to the retailer.

The Canning Industry. The canning of asparagus as a commercial proposition is generally and apparently correctly credited to Mr. R. Hickmott. This gentleman was employed in the canneries putting up fruit, vegetables and fish located in the Sacramento region of the delta for many years. In 1890 he left the position of superintendent of the Capital Cannery Company, Sacramento, to engage in business for himself, devoting his attention to the canning of asparagus. His first cannery was located on Bouldin Island near the confluence of the Mokelumne and San Joaquin rivers. Mr. Hickmott is credited with having spent twenty years and \$30,000 in his experiments in connection with the canning of asparagus.

At present there are ten plants in California, all in the Sacramento delta district, exclusively engaged in the canning of asparagus. In addition there are six other plants engaged in this industry, but not exclusively. Outside of California there is but one cannery (at Mattituck, New York), devoted exclusively to asparagus. Plants in New York, Illinois, New Jersey and Maryland pack some asparagus as a part of their output, but their combined total is but a small percentage of the California pack.

As previously stated, about 66.6 per cent of the asparagus grown in the Sacramento delta is purchased by the canneries. This amounts to about 39,670,405 pounds.

The custom is for the growers to contract with the canneries for their output, either for the season or for a term of years. This contract specifies as to the character of the sprouts—that they shall be 7 inches long, free from abrasions or cuts, and shall be delivered to the cannery once or twice a day and on the day cut. Deliveries are to be made either at the cannery proper or at some landing on the river where the cannery launch can pick it up.

One usual feature of these contracts gives the grower the privilege of diverting his product from the canner to either the local or Eastern market up to March 25th, or during the early part of the season when high prices prevail.

The prices paid by the canneries range from $2\frac{1}{2}$ to 4 cents a pound, according to quality and local conditions. Three cents may be regarded as being a fair average price. For obvious reasons the canners are not willing to divulge what they do pay, but it is known that one cannery paid as low as 2.75 cents, another 2.92 and a third 2.98 cents. Contracts made three to five years ago are on a 3 to 4-cent basis. Those of more recent date run $2\frac{3}{4}$ to $3\frac{1}{4}$ cents, evidencing a downward tendency. This undoubtedly is the result of local market conditions. Of late years the growers' returns from this source have been from $2\frac{1}{2}$ to 3 cents, and while the amount sold locally is far less than that sold to the canneries, the prices thus prevailing have affected those paid by the canneries.

One of the canneries raises all of the asparagus it puts up; another has 1,020 acres planted, but a part of its crop is shipped east in a fresh condition.

Upon arrival at the cannery the "grass" is immediately put in the way of canning, it being the practice of the best canneries to put it up the same day as received. For this reason the cannery day usually commences about 1 p.m. with the morning receipts and continues until the last of the day's deliveries have been handled, usually about midnight, though not infrequently the day continues until 3 or 4 o'clock in the morning. A fair day's supply for a large cannery is from 1,000 to 1,200 boxes, though 1,500 is not abnormal.

After passing on the scales to determine their gross weight, the boxes of asparagus are emptied on the sorting tables, where the stalks are divided into the seven grades recognized by the trade, viz: "Extra Giant," "Giant," "Mammoth," "Large," "Medium," "Small," and "Ungraded." The very best of the stalks are turned over to the peelers, who peel off the skin, thus getting the finest appearing pack, though it is a disputed question as to whether in peeling some of the aroma and taste is not lost. The sorting is done in "cutting boxes," wooden receptacles holding about 5 pounds each. The stalks are smoothly laid in the cutting box with the heads in one direction and their butt ends are trimmed evenly so as to give a uniform length. They are then placed in "china baskets" holding about a bushel and a half and dipped into a vat of boiling water (called a "blanching vat") for about 5 minutes. This thoroughly cleanses them and also softens the stalks so they can be handled without danger of being bruised or broken.

After leaving the blanching vat the asparagus is dumped on the canning tables. These are about 20 feet long and $2\frac{1}{2}$ feet wide. Each worker, and there are seven at a table, has a 20-inch porcelain-lined sink set into the table in front of him. A constant supply of clean cold water fills these sinks and the asparagus is again washed and picked over, all broken, bruised or discolored stalks being removed. Over the canning tables are two shelves. On the top one is kept a supply of empty cans and on the lower are placed the filled cans. An alleyway between the tables provides for the passage of attendants who keep the packers supplied with asparagus and empty cans, removing the filled ones. A wooden tray holding a dozen cans is used in handling both filled and empty cans. The packer inserts the stalks, butts down, in the empty can, using care to see that they lie straight and that the can is filled according to established rules—so many stalks according to the grade. This runs from 8 to 12 for Extra Giant, 12 to 15 for Giant, 18 to 23 for Mammoth, 28 to 32 for Large, 40 to 45 for Medium, and 50 to 55 for Small. Short lengths, broken and irregular stalks are bunched together as Ungraded to the capacity of the can.

The work of sorting and packing in cans is largely done by Chinese and Japanese—not because of their doing it any cheaper or better but simply for the reason that white labor will not work the irregular hours, hands in water all of the time, and with the discomforts that seem inseparable from the short season and crowded accommodations available.

The work is all done as "piece work." Usually it is "farmed out" to a "boss" Chinese or Japanese, who receives an average of 20 cents a dozen cans for handling the asparagus from the time it is unloaded on the receiving platform of the cannery in lug boxes, through the process of sorting, blanching, packing, etc., until the cans are piled on the

cooling platform ready for labeling and boxing. The supervising, inspecting and mechanical work is done by white men, as is also the labeling and boxing.

Until recently, what in trade parlance is known as "hole and cap" cans were used. They have a hole $2\frac{1}{16}$ inches in diameter in the top of the can and are sealed by a tin cap being soldered over the hole. It required considerable skill and time to pack a can through this small opening. More modern methods have brought about the use of the "sanitary" can, which comes to the cannery without any top, making it much easier to clean and pack. It is closed, as explained later, by having a top crimped on its end. As each can is filled, it is placed on a wooden tray holding a dozen. These trays pass under the eyes of an inspector who sees that they are properly packed. The trays then go to the "brining table," where an ingenious arrangement of twelve pipes automatically fills each can full of a weak brine, a mixture of pure water and the best salt. The cans then go to a series of three machines through which they are passed automatically; the top is clinched on by the clincher, the temperature raised by a steam bath so as to drive all air from the can by the exhaust box, and the edges of the can and of the top are doubled together into a hermetical seam by the seamer. The cans are then placed in a retort, where they are cooked for twenty-five minutes in a steam bath of 230 degrees Fahrenheit, under a pressure of 7 pounds. They are then ready for the cooling platforms and, after inspection, are labeled, boxed and warehoused for shipment.

Shipments are made in wooden cases holding two dozen of the ordinary ($2\frac{1}{2}$ -pound) cans and four dozen of the smaller (1-pound) size. The total output of the California canneries for the last four years has been:

1912 -----	18,000,000 cans
1913 -----	19,000,000 cans—723,000 cases
1914 -----	20,000,000 cans—768,810 cases
1915 -----	21,000,000 cans—800,380 cases

The canner's expenses, including cost of asparagus, material used in canning, labor, interest on investment and freight from cannery to San Francisco or Sacramento (regarding the product loaded on the cars at these latter points as 100 per cent) run about as follows:

	Per cent.
For asparagus -----	40
Cans, solder, salt, etc.-----	20
Labor -----	21
Labels, boxes, lacquer, etc.-----	4
Freight and drayage-----	2
Miscellaneous expense, including interest on investment-----	13

One dozen $2\frac{1}{2}$ -pound cans of the Large White (the standard grade of the better sort) is sold by the canners at \$1.90, or 15.83 cents per can. The freight rate on this to Chicago or New York is $62\frac{1}{2}$ cents per hundred pounds, or $1\frac{1}{2}$ cents per can by rail; or 40 cents per hundred pounds by rail and water via Galveston, equivalent to 1 cent per can. This grade

sells at retail in Chicago or New York at from 35 to 40 cents a can, according to the class of store. These costs give the following:

	Cents per can	Cents per pound
Cost of asparagus.....	7.5	3.00
Cost of canning.....	8.3	3.32
Moving to New York (all rail).....	1.5	.60
Marketing expense	17.7	7.08
Cost to consumer.....	35.0	14.00

In other words, it costs as much to market in Chicago or New York as it does to grow, can, and move the asparagus from California to the market.

Recommendations. Under the act creating the State Commission Market, it is made a part of the duty of the Market Director to make such "suggestions and recommendations as may be deemed of value to the people of the State." In compliance therewith the following recommendations are made:

In connection with the marketing of the asparagus crop, it is evident that the growers are failing to receive commensurate compensation; that there are improved methods which would bring about increased returns and, if not reducing the price to the consumer, would at least result in no increase in cost and at the same time facilitate delivery; that there is an opportunity for material increase in the consumption of asparagus, which must of necessity result to the advantage of the grower.

The remedies for present troubles will largely be overcome by co-operation on the part of the growers, standardization of the asparagus shipments and the establishment at San Francisco, Los Angeles and Sacramento of a general market at which receipts can be handled.

First, as to Co-operation. According to the *Scientific American*, there are now in existence some 14,700 co-operative organizations in the United States. The asparagus industry, like nearly all other agricultural occupations in California, is failing to give adequate returns to the growers on account of unrestricted and injudicious competition between producers. As at present conducted, each grower is attempting to perform the dual role of grower and seller. He is putting his lack of experience as a selling agent and deficient knowledge of market conditions against the trained and experienced buyer. It is not intended to convey the impression that the buyer, whether he be a jobber, commission merchant or cannery employee, is "crooked," or that there is any attempt or even desire to take advantage of the grower; but the fact is that as a class or as an individual, the buyer is successful in just the degree that he can get his supply of asparagus at a low price. It is his business to buy cheaply, to hammer the prices he must pay; and if, as is usually the case, he is an employee of some firm or corporation, his value to his employer and his compensation is governed by the ability he displays to buy a little cheaper than is done by competitors. Under these circumstances it is but human that the buyer should use all legitimate means to buy cheaply. His knowledge of the markets, supply, demands, prices, etc., give him an advantage over the grower.

Again, with lack of co-operation there is bound to be glutting of the market and consequent low prices, if not actual loss to the grower. Without co-operation, any intelligent effort to increase the demand is almost impossible. Standardization is out of the question, and to all intents and purposes the middle man, and not the producer or consumer, is in control. This condition would be largely rectified by intelligent co-operation. The grower would then have an experienced representative who, with control of the crops, would meet the buyers on an equality; and through such agency, distribution and an increased demand could be systematically worked out.

Second. Standardization is called for by all interested, except the grower. The consumer is entirely willing and even anxious to pay the additional expense that this would cost; the jobbers and commission men are anxious for it because of the aid it would afford them in selling. In fact, not infrequently the larger retailers and jobbers find it advisable to go over their asparagus receipts, sorting out the various grades, and the canner always does so. In this connection it is suggested that as 66 per cent of the output is segregated by the canneries into Extra Giant, Giant, Mammoth, Large, Medium and Small, it would be well to adopt some such basis generally.

Third. The establishment at San Francisco, Los Angeles and Sacramento of general markets. The State Market Director is not at present in a position to make any suggestions. There are steps being taken that it is expected will bring this about, but the arrangements have not yet reached the point justifying announcement.

There is a limited but remunerative field for the grower who will build up a trade direct with the retailer. Two channels are open in this direction—one through the parcel post and the other through the Wells Fargo Express service. Postmasters in most of the larger cities are now issuing a list of producers who cater direct to the retail trade. The list published monthly by the postmaster at San Francisco, for February, 1916, does not give the address of a single asparagus grower. Correspondence with the postmasters in the various cities will develop the necessary action to have the producer who is willing to fill orders direct mentioned in future lists. No charge is made for this service. The Wells Fargo Express Company also issues a pamphlet, which is given a wide circulation, containing the names of growers, the prices charged, etc. An inquiry addressed to the traffic manager of this company at San Francisco will bring information showing just how a grower can secure the insertion of his address in the pamphlet. No charge is made for this service by the company.

APPENDIX "A."

Receipts and Wholesale Prices of Asparagus, San Francisco Market, Season 1915,
as per Market Quotations of the San Francisco Chronicle.

Date	Prices quoted—per pound	Receipts
Feb. 16	25 to 50 cents -----	20 pounds.
Feb. 17	Same -----	18 pounds.
Feb. 18	30 to 40 cents -----	60 pounds.
Feb. 19	20 to 30 cents -----	Heavier.
Feb. 20	No quotation -----	
Feb. 23	10 to 20 cents -----	250 pounds.
Feb. 24	Same -----	250 pounds.
Feb. 25	10 to 15 cents -----	300 pounds.
Feb. 26	Same, with Fancy, 17½ cents -----	Slightly lower.
Feb. 27	Same -----	100 pounds.
Mar. 1	15 to 17½ cents, with Fancy, 20 cents -----	54 pounds.
Mar. 2	10 to 15 cents, with Fancy, 17½ cents -----	215 pounds.
Mar. 3	12½ to 15 cents, with Fancy, 20 cents -----	119 pounds.
Mar. 4	Same -----	115 pounds.
Mar. 5	Same -----	Slightly lower.
Mar. 6	Same -----	75 pounds.
Mar. 8	Same, with Fancy, 17½ cents -----	100 pounds.
Mar. 9	10 to 12½ cents, Fancy, 15 cents -----	500 pounds.
Mar. 10	Same -----	Slightly lower.
Mar. 11	9 to 12½ cents, Fancy, 13 to 15 cents -----	500 pounds.
Mar. 12	Same -----	475 pounds.
Mar. 13	Same -----	475 pounds.
Mar. 15	6 to 8 cents, Fancy, 8 to 11 cents -----	387 pounds.
Mar. 16	6 to 10 cents, Fancy, 10 to 12 cents -----	Heavy arrivals.
Mar. 17	5 to 7 cents, Fancy, 8 to 11 cents -----	160 pounds.
Mar. 18	4 to 6 cents, Fancy, 7 to 9 cents -----	2,339 pounds.
Mar. 19	2 to 6 cents, Fancy, 7 to 9 cents -----	2,234 pounds.
Mar. 20	4 to 6 cents, Fancy, 7 to 8 cents -----	2,500 pounds.
Mar. 22	3 to 5 cents, Fancy 6 to 7 cents -----	3,100 pounds.

(Shipments by box during balance of season.)

APPENDIX "A"—Continued.

Receipts and Wholesale Prices of Asparagus, San Francisco Market, Season 1915,
as per Market Quotations of the San Francisco Chronicle.

Date	Prices quoted—per box.
Mar. 23	\$1.35 to \$1.50 box, Field Run. \$1.50 to \$2.00 box, Fancy.
Mar. 24	\$1.35 to \$1.50 box, Field Run. \$1.50 to \$1.75, Fancy.
Mar. 25	\$1.15 to \$1.40 box, Field Run. \$1.40 to \$1.85 box, Fancy.
Mar. 26	85 cents to \$1.00 box paid by canners buying in market. Same for Field Run, Fancy and Canners.
Mar. 27	\$1.00 to \$1.40 box, Field Run. \$1.40 to \$1.75 box, Fancy.
Mar. 29	85 cents to \$1.00 box, by canners. Same for Field Run, Fancy and Canners.
Mar. 30	Same.
Mar. 31	Same.
Apr. 1	\$1.25 to \$1.50 box, Field Run. \$1.75 to \$2.00 box, Fancy. \$1.00 to \$1.25 box, paid by canners.
Apr. 2	Same.
Apr. 3	Same.
Apr. 5	Same.
Apr. 6	\$1.25 to \$1.50 box, Field Run. \$1.50 to \$1.75 box, Fancy. \$1.00 to \$1.25 box, paid by canners.
Apr. 7	Same, with Fancy, \$1.75 to \$2.00 box.
Apr. 8	Same, with canners paying \$1.00 box.
Apr. 9	Same, with Fancy, \$1.75 to \$2.25 box.
Apr. 10	Same.
Apr. 12	\$1.25 to \$1.50 box, Field Run. \$1.75 to \$2.00 box, Fancy. 85 to 95 cents box, by canners.
Apr. 13	Same.
Apr. 14	Same.
Apr. 15	Same.
Apr. 16	\$1.35 to \$1.60 box, Field Run. \$1.85 to \$2.25 box, Fancy.
Apr. 17	Same.
Apr. 19	\$1.25 to \$1.50 box, Field Run. \$1.75 to \$2.00 box, Fancy. \$1.00 box, paid by canners.
Apr. 20	Same prices.
Apr. 21	Same.
Apr. 22	Same, Field Run; \$1.25 to \$1.90, Fancy; \$1.00, Canners.
Apr. 23	Same, Field Run; \$1.25 to \$2.00, Fancy; \$1.00, Canners.
Apr. 24	Same prices.
Apr. 26	Same, Field Run; \$1.60 to \$1.90, Fancy; 85 to 95 cents, Canners.
Apr. 27	Same prices.
Apr. 28	Same, Field Run; \$1.60 to \$1.85, Fancy; Canners, same.
Apr. 29	Same, Field Run; \$1.75 to \$2.25, Fancy; Canners, same.
Apr. 30	Same, Field Run; \$1.75 to \$2.00, Fancy; 75 to 85 cents, Canners.
May 1	\$1.25 to \$1.50 box, Field Run. \$1.75 to \$2.25 box, Fancy. \$1.00 box paid by canners.
May 3	Same, Field Run; \$1.75 to \$2.50, Fancy; same, Canners.
May 4	Same prices.
May 5	\$1.50 to \$2.00 box, Field Run. \$2.25 to \$2.75 box, Fancy; Canners out.
May 6	Same, Field; \$3.00 box, Fancy; Canners out.

APPENDIX "A"—Continued.

Receipts and Wholesale Prices of Asparagus, San Francisco Market, Season 1915,
as per Market Quotations of the San Francisco Chronicle.

Date	Prices quoted—per box.
May 7	Same, Field Run; \$2.25 to \$2.50 box, Fancy; Canners out.
May 8	No quotations.
May 10	\$1.50 to \$1.75 box, Field Run. \$2.00 to \$2.25 box, Fancy; \$1.00 box, Canners.
May 11	Same prices.
May 12	\$1.50 to \$1.70, Field; \$1.75 to \$2.25, Fancy; \$1.00, Canners.
May 13	Same prices.
May 14	\$1.50 to \$1.70, Field; \$1.75 to \$2.25, Fancy; \$1.00, Canners.
May 15	\$1.75 to \$2.00, Field; \$2.00 to \$2.25, Fancy.
May 17	Same, Field; \$2.00 to \$3.00, Fancy.
May 18	\$1.50 to \$2.00, Field; \$2.00 to \$2.50, Fancy.
May 19	\$1.75 to \$2.00, Field; \$2.25 to \$2.50, Fancy.
May 20	Same prices.
May 21	Same, Field; \$2.25 to \$3.00, Fancy.
May 22	\$1.75 to \$2.00, Field.
May 24	Same.
May 25	Same.
May 26	\$1.00 to \$1.50, Field; \$1.75 to \$2.50, Fancy.
May 27	Same, Field; same, Fancy; \$1.00 to \$1.25, Canners.
May 28	Same, Field; \$1.75 to \$2.00, Fancy; \$1.00, Canners.
May 29	Same; \$1.00 to \$1.25, Canners.
June 1	Same prices.
June 2	Same prices.
June 3	Same prices.
June 4	\$1.00 to \$1.25, Field; \$1.25 to \$1.50, Fancy; \$1.00, Canners.
June 5	Same, Field; no Fancy grade; 90 cents to \$1.00, Canners.
June 7	Same, Field; \$1.25 to \$1.50, Fancy; 75 to 85 cents, Canners.
June 8	\$1.00, Field Run; \$1.50, Fancy; 75 cents to \$1.00, Canners.
June 9	Same prices.
June 10	\$1.00, Field Run; \$1.25, Fancy; 60 to 90 cents, Canners.
June 11	Same, 75 to 90 cents, Canners.
June 12	90 cents to \$1.00, Field; \$1.25, Fancy; 60 to 90 cents, Canners.
June 14	Same prices.
June 15	Same; 75 cents to \$1.00, Canners.
June 16	Same prices.
June 17	Same prices.
June 18	\$1.00, Field; \$1.50, Fancy; \$1.00, Canners.
June 19	Same prices.
June 21	Same prices.
June 23	Not enough in market to quote.
June 24	Not enough in market to quote.
June 25	\$1.00, Field; \$1.25, Fancy; \$1.00, Canners.
June 26	\$1.35, Field; \$1.50, Fancy; \$1.00, Canners.
June 28	Not enough in market to quote.
June 29	Not enough in market to quote.
June 30	\$1.00, Field; \$1.25 to \$1.35, Fancy.
July 1	\$1.25 to \$1.50, Field Run, with small offerings.
July 2	\$1.00 to \$1.50, same.
July 3	\$1.00 to \$1.25, same.
July 6	75 cents to \$1.00, same.
July 7	50 cents to \$1.00, same.
July 8	50 to 75 cents, same.
July 9	Same prices.
July 10	75 cents to \$1.00; small offerings.
July 12	50 cents to \$1.00; same. No further quotations.

APPENDIX "B."

Wholesale Prices of Asparagus, Los Angeles Market, Season 1915, as per Market Report, Los Angeles Examiner.

Date,	Price per pound—cents		Comments
	White	Green	
Feb. 24-----	25 to 35	50 to 60	Small shipment from Imperial Valley.
Feb. 25-----	25 to 30	-----	
Feb. 26-----	25 to 30	-----	From North and Imperial Valley.
Feb. 27-----	25 to 30	-----	
Mar. 1-----	25 to 30	-----	
Mar. 2, 3, 4-----	Same prices.		Coming in slowly.
Mar. 5-----	15	22 to 25	More coming in.
Mar. 6-----	15	22 to 25	
Mar. 8-----	15	22 to 25	Growing more plentiful; taking more
Mar. 9-----	15	22 to 25	important place in market.
Mar. 10-----	15	22 to 25	
Mar. 11-----	15 to 20	25 to 30	
Mar. 12, 13, 15, 16---	Same prices.		
Mar. 17-----	10 to 12	12½ to 15	Supply increasing daily.
Mar. 18-----	Same prices.		
Mar. 19-----	8 to 9	12½	
Mar. 20-----	Same prices.		
Mar. 22-----	8 to 9	10 to 12½	Local Grass comes in.
Mar. 23-----	Same prices.		Much local Grass comes in.
Mar. 24-----	5 to 8	8 to 10	
Mar. 25, 26, 27-----	Same prices.		
Mar. 29-----	5 to 8	8 to 10	Large supply local Grass.
Mar. 30-----	5 to 6	6 to 9	Large quantity daily.
Mar. 31-----	Same prices.		Large quantity received.
Apr. 1, 2, 3, 5-----	5 to 6	7 to 9	Plentiful with wide range. Fancy Northern, 10 to 12 cents.
Apr. 6, 7, 8, 9, 10--	5 to 6		No Green quotations for balance season.
Apr. 12 to 20, incl.	4 to 8		
Apr. 21 to 24, incl.	4 to 7		
Apr. 26, 27, 28-----	5 to 7½		
Apr. 29, 30-----	5 to 8		Northern shipments off.
May 1 to 8, incl.---	5 to 9		Shipments from North cut down.
May 10, 11, 12, 13---	5 to 8		Shipments from North low; local Grass firm as result.
May 14, 15, 17, 18---	7 to 9		
May 19, 20, 21-----	8 to 8½		
May 22 to 31, incl.	7½ to 8		
June 1 to 5, incl.---	7½ to 8		
June 7, 8-----	5 to 7		
June 9-----	6 to 7		
June 10, 11, 12-----	7 to 7½		
June 14 to 21, incl.	7		
June 22, 23-----	8		
June 24-----	9		
June 25-----	9 to 12		Small receipts, little demand.
June 26, 28-----	9		
June 29, 30-----	10 to 12		
July 1 to 12, incl.	10 to 12		No further quotations.

APPENDIX "C."

Retail Prices Asparagus, Sacramento Market, Season 1915, as per Market Quotations, Sacramento Bee.

Sacramento wholesale prices are given as being the same as San Francisco.

Date	Price per pound	Date	Price per pound
March 6	25 cents.	May 8	5 to 8 cents.
March 13	20 cents.	May 15	6 to 8 cents.
March 20	No quotations.	May 22	6 to 8 cents.
March 27	No quotations.	May 29	6 to 8 cents.
April 3	5 to 8 cents.	June 5	6 to 8 cents.
April 10	5 to 8 cents.	June 12	6 to 8 cents.
April 17	5 to 8 cents.	June 19	6 to 8 cents.
April 24	5 to 8 cents.	June 26	\$1.50 to \$1.75 box.
May 1	5 to 8 cents.	July 3	\$1.50 to \$1.75 box.

APPENDIX "D."

California Asparagus in the New York Market.

NEW YORK, February 27, 1915.—The first California asparagus of the season arrived here from Sacramento County by express yesterday and opened at \$15 to \$20 per dozen bunches. (New York correspondence, *Sacramento Bee*, March 16th.)

NEW YORK, March 6, 1915.—California asparagus was in active demand during the early part of the week; readily commanded \$20 to \$25 a dozen bunches. Subsequently the market weakened, and prices ranged from \$12 to \$18 for the best. Receipts were light. (New York correspondence, *Sacramento Bee*, March 13th.)

NEW YORK, March 13, 1915.—The California asparagus market was weaker, but prices nevertheless were good, the range in the earlier part of the week being from \$6 to \$20 per dozen bunches. Toward the close the best stock declined to \$15, while "loose" grass remained steady at \$5 to \$10 per box. (Cone.) The first shipment of Charleston, S. C., asparagus arrived, but owing to cold weather did not sell as readily as receivers expected. The best brought about the same as California. (New York correspondence, *Sacramento Bee*, March 20th.)

NEW YORK, March 20, 1915.—The first solid car of California asparagus arrived here yesterday. Most of it was consigned to New York receivers. There was one shipment for Boston. The quality and condition were very good. The best of the car brought \$15 per dozen bunches and lower grades \$5 to \$7. Charleston, S. C., asparagus sold at the same price until the middle of the week, when values declined to \$3 and \$6 per dozen bunches. The demand for California asparagus is very active and receivers hope that only good stock will be shipped, and culls kept away from the East. (New York correspondence, *Sacramento Bee*, March 27th.)

NEW YORK, March 27, 1915.—Under heavy arrivals from all sections, California asparagus went down this week and prices closed considerably lower. Carload lots now arriving very liberally. A little of the best brought \$9 to \$10 in the early part of the week. Toward the close it sold at \$5 and \$6 and short grass at \$3 and \$4.75. A small quantity of poor stock sold as low as \$2 per dozen bunches. Georgia began shipping, but the stock was small, unattractive and neglected. Charleston, S. C., declined under heavy receipts to \$2 to \$3.50 per dozen bunches. (New York correspondence, *Sacramento Bee*, April 3d.)

NEW YORK, April 3, 1915.—Owing to heavier receipts, which showed the effects of rains and unfavorable weather, the California asparagus market went down. Arrivals aggregated about 28 carloads. Prices declined on Monday to \$6.50 and \$7 on Colossal, \$5.50 to \$6 on Jumbo, \$4.75 to \$5 on Extra, and \$3.50 to \$3.75 on Prime. A gradual weakness developed from day to day and sales at the close were at \$6 on Colossal, \$4 on Jumbo, \$3.50 on Extra, \$3 on Prime and \$2.25 to \$2.50 on Seconds. Demand was disappointing. Considerable South Carolina appeared and most was badly graded and the best seldom exceeded \$4.50. Lower grades sold at \$2 to \$2.50 per dozen bunches. Georgia grass was neglected in favor of California. (New York correspondence, *Sacramento Bee*, April 10th.)

APPENDIX "E."

Receipts of Asparagus, San Francisco, Season 1915. By Sacramento and San Joaquin River Boats.

Date	Number boxes	Date	Number boxes
February 11	6	April 15	5,005
February 13	4	April 16	4,845
February 16	20	April 17	2,401
February 17	7	April 18	3,618
February 18	26	April 19	561
February 19	10	April 20	3,963
February 20	45	April 21	3,781
February 21	23	April 22	2,883
February 22	17	April 23	2,299
February 23	55	April 24	2,857
February 24	238	April 25	2,794
February 25	129	April 26	137
February 26	234	April 27	2,805
February 27	72	April 28	2,911
February 28	186	April 29	2,652
March 2	62	April 30	1,176
March 3	133	May 1	2,841
March 4	559	May 2	2,884
March 5	394	May 3	77
March 6	511	May 4	3,549
March 7	749	May 5	2,505
March 8	52	May 6	3,110
March 9	787	May 7	1,973
March 10	270	May 8	1,928
March 11	2,327	May 9	2,310
March 12	2,053	May 10	327
March 13	1,914		
March 14	2,634	May 11	2,918
March 15	684	May 12	4,332
March 16	3,481	May 13	3,533
March 17	3,487	May 14	2,059
March 18	4,377	May 15	2,658
March 19	3,579	May 16	1,539
March 20	4,726	May 17	237
March 21	4,200	May 18	2,982
March 22	2,287	May 19	3,935
March 23	3,686	May 20	1,734
March 24	6,901	May 21	1,907
March 25	4,735	May 22	2,483
March 26	2,781	May 23	1,816
March 27	4,413	May 24	399
March 28	2,567	May 25	2,671
March 29	535	May 26	1,928
March 30	5,812	May 27	2,797
March 31	4,712	May 28	2,655
April 1	5,432	May 29	2,470
April 2	2,815	May 30	1,148
April 3	6,508	May 31	1,248
April 4	5,033	June 1	2,887
April 5	3,904	June 2	2,468
April 6	3,505	June 3	2,321
April 7	5,900	June 4	1,959
April 8	4,300	June 5	2,834
April 9	3,792	June 6	2,736
April 10	3,792	June 7	9
April 11	2,644	June 8	2,373
April 12	3,334	June 9	1,890
April 13	3,301	June 10	1,978
April 14	5,558	June 11	1,888

APPENDIX "E"—Continued.

Receipts of Asparagus, San Francisco, Season 1915. By Sacramento and San Joaquin River Boats.

Date	Number boxes	Date	Number boxes
June 12	2,237	July 9	524
June 13	1,406	July 10	209
June 14	342	July 11	42
June 15	2,333	July 12	32
June 16	3,378	July 13	183
June 17	2,264	July 14	244
June 18	2,822	July 16	75
June 19	1,884	July 17	37
June 20	1,900	July 20	80
June 21	214	July 21	23
June 22	1,882	July 22	96
June 23	1,667	July 24	42
June 24	1,399	July 27	9
June 25	1,284	July 28	79
June 26	1,786	July 29	41
June 27	1,339	July 30	13
June 28	1,472		
June 29	2,008	Recapitulation—	
June 30	2,258	February	1,072
July 1	1,599	March	75,408
July 2	1,531	April	104,686
July 3	981	May	68,953
July 4	390	June	57,218
July 6	616	July	8,711
July 7	840		
July 8	1,025	Total for season	316,048

APPENDIX "F."

List of Canneries in California that Pack Asparagus.

Name of firm or corporation	Location plant	Location general office
California Fruit Cannery Assn.	San Francisco Pittsburg. Vorden. Sacramento	120 Market st., San Francisco.
Griffin & Skelly	Isleton Oakland.	16 California st., S. F.
Golden State Asparagus Co.	Isleton	16 California st., S. F.
Libby, McNeil & Libby	Isleton Ryde. Sacramento.	417 Market st., San Francisco.
Pacific Coast Canning Co.	Oakland	1816 Twelfth st., Oakland.
Pratt, Low & Co.	Ryde	Santa Clara.
Hickmott Canning Co.	Orwood	320 California st., S. F.
West Coast Asparagus Co.	Holt	Not in operation seasons 1915-16.

APPENDIX "G."

Acreage and Production by Japanese Growers during 1914.

Acreage, Sacramento County, 7,493; San Joaquin County, 1,524; total, 9,017. Of this, 650 acres were owned by them; 1,346 rented on cash basis, and 7,021 rented on shares. Total cash returns received by Japanese growers were \$1,428,750. (Japanese-American Year Book.)

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