

# The Pacific Coast Oil Industry

## History, Evolution and Progress of the Vegetable and Fish Oil Trades

BY P. W. TOMPKINS\*

**T**HE vegetable oil industry has a unique and picturesque history on the Pacific Coast, dating back to the early days of Spanish rule in California. We have every reason to assume that, following the arrival of the Spaniards at San Francisco in 1776, came the Spanish trading vessels, which no doubt brought the first arrivals of vegetable oils to the Pacific Coast in the form of olive oil. Until California entered the Union in 1850, the principal trading was probably with Spain, but after that date, trading vessels of other nations brought to the Pacific Coast supplies of Spanish, Italian and French olive oil, which continue to arrive today in large quantities but by modern methods of transportation.

Shortly after California was admitted to the Union, many sailing vessels of the smaller type, especially those known as "tea clippers," entered into trading between Oriental ports and San Francisco, which eventually brought to the Golden State large numbers of Chinese laborers to work in the California gold mines. The Chinese being large consumers of edible oils, it was but a short time before Chinese peanut oil appeared on the Pacific Coast. The oil at that time, and even today, for Chinese consumption here, was packed in tins of 18 lbs. net each, four tins to the case. Up to about 1890 the demand for other vegetable oils was very small. However, the Pacific Coast

importers have always been most progressive in their endeavors to introduce and create outlets for various foreign vegetable oils, and through their efforts have been successful in introducing into this country oils that today occupy an important place in many American industries.

The early imports of vegetable oils were brought forward in small packages, including second-hand kerosene oil cans, wooden barrels, some shipments arriving in old wine, olive oil and beer barrels, and later puncheons and iron drums.

Many interesting changes have taken place in this industry during its long and varied development on the Pacific Coast, particularly during the spectacular World War period, when San Francisco and Seattle suddenly became the principal ports of entry for nearly the entire Oriental output. Scarcity of space owing to demand for vessels on the Atlantic side, among other reasons, forced this vast oil traffic to the Pacific Coast, whence it was distributed throughout the United States and Canada, and eventually large quantities of the finished products found their way to European countries to supply a serious need for food, and glycerine for explosives.

It is not the purpose of these remarks to deal specifically with the characteristics or properties of these oils, as this is fully covered in numerous standard works, government bulletins and scientific and trade journals. This article is intended only as a narrative of trade

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development and changes in methods of physical handling and transportation.

### Methods of Shipment and Handling

Up to about 1918, very few oil importations were made in bulk, the majority arriving in the small packages referred to above. During the World War period, importations were so vast, and the industry so unprepared to properly handle such large tonnage, that great congestion and waste were

the necessity of quickly developing machines to do part of the work. While many shipments were sent through to their destinations in their original containers, by far the greatest proportion was transferred to tank cars on the Pacific Coast. Large storage tanks had to be built, dumping tables and pumping facilities installed, but little by little equipment was developed resulting in a number of large and efficient plants. When these plants had reached a high state of efficiency, and adequate storage capac-



*Cargoes of oil in cases at Seattle, typical of congestion and intensity of industry on the Pacific Coast during the war period*

inevitable; methods of handling, crude and inadequate, although later much improved.

The unpreparedness and lack of opportunity to immediately install adequate facilities to handle this immense amount of oil, made the earlier stage one of confusion. The time and labor involved in handling these millions of cases and barrels caused much concern, and showed

ity was available, the slump of 1920-21 left them with little of their former activity. The tariff of 1922 still further reduced their sphere of usefulness, with the result that several have since gone out of existence or been modified for petroleum oil storage.

Shipments in cans and barrels were subject to heavy leakage at that time, and often many tons of

mixed oil were found in the bilges of vessels, sometimes badly emulsified with water, all of which necessitated means of salvage. In consequence, separating and filtering devices were installed to recover the oil in a salable state, which in the case of a mixture of oils, eventually found its way to the soap kettle. When the oil was not mixed but confined to a given kind, the treated and recovered product would go back to the shipment from which it originated. Frequently, however, there would

the lower tiers, started leakage, and the oil once getting between the staves and under hoops, acted as a lubricant permitting more ready movement, which eventually loosened the staves causing leakage to become quite general. It was common to have many barrels of a lot arrive empty or only partly full. Also in the rush of war times, proper ventilation of the holds was neglected, and the expansion and contraction between the heat of the day and the cooler nights crossing the Pacific occasioned leakage in



*Three conveyor chutes in background moving empty cases to fire dump*

be several consignees of, say, peanut oil, and disputes would naturally arise as to how much of this recovered oil belonged to the individual lots.

A serious problem arose from shipments forwarded in wooden barrels which were piled high one on the other in the vessel's hold, since the working of the staves due to the movement of the boat, together with the heavy pressure on

many barrels which would otherwise have withstood equal temperatures.

To overcome these difficulties, various sizings were tried out, such as silicate of soda, animal and casein glues, etc., and oil in these experimental barrels was sent over and back from the Orient to test their comparative merits. Hoops were also "dogged" in place so they could not shift, and as a result of

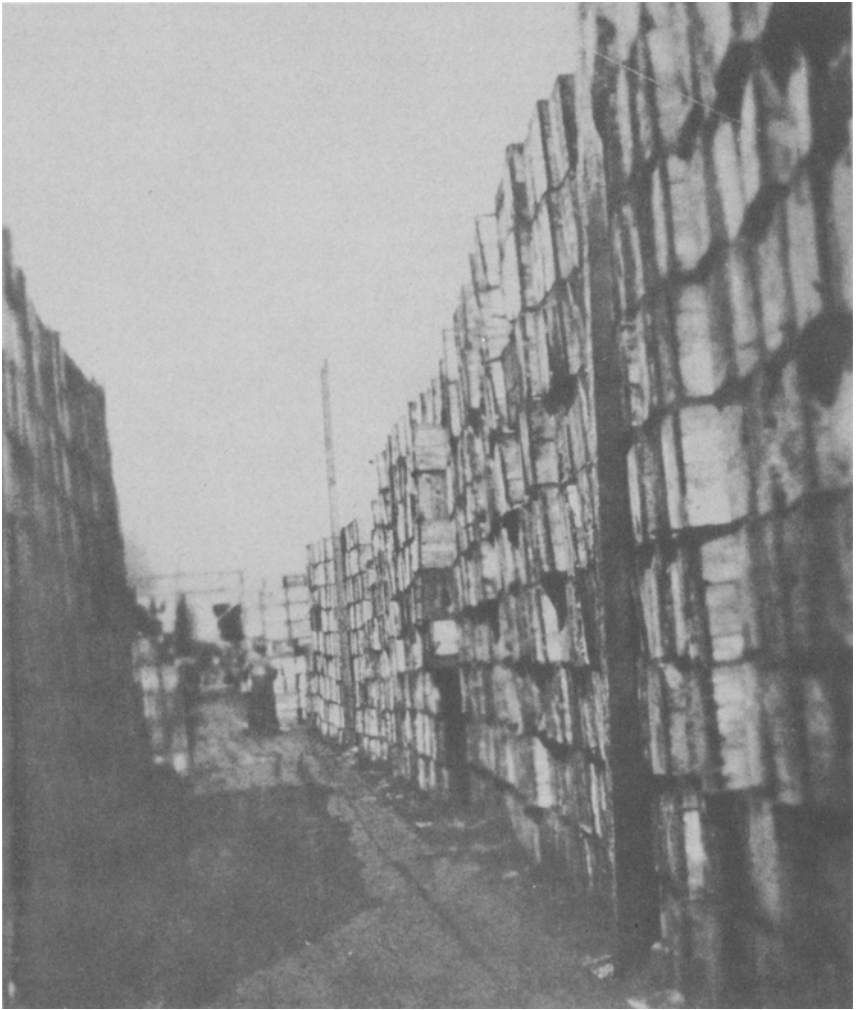
these betterments, it was eventually found possible to ship in wooden barrels with only small occasional leakage, and these methods are usually followed at the present time when barrel shipments are made.

Cocoonut oil shipments in these numerous small packages naturally presented a difficulty not affecting other oils, since it is solid at normal temperatures and there had to be some means of melting prior to transferring it to tank cars or storage tanks. This was accomplished by erecting crude wooden rooms in

which steam coils were placed, the barrels and tins being heated in these rooms. Sometimes the barrels, drums and cans were laid over inflexible steam coils and covered with canvas, until the oil had melted. Frequently these same contrivances would be augmented by allowing live steam to escape at various places around the cans. A favorite method was to shoot live steam into barrels until they were empty, allow the mixture of oil and condensed water to settle in some receptacle and then draw off the



*Sampling barreled and case goods under these conditions presented difficulties*



*Rows of piles of cases such as this sometimes had to be pulled down several times for sampling purposes*

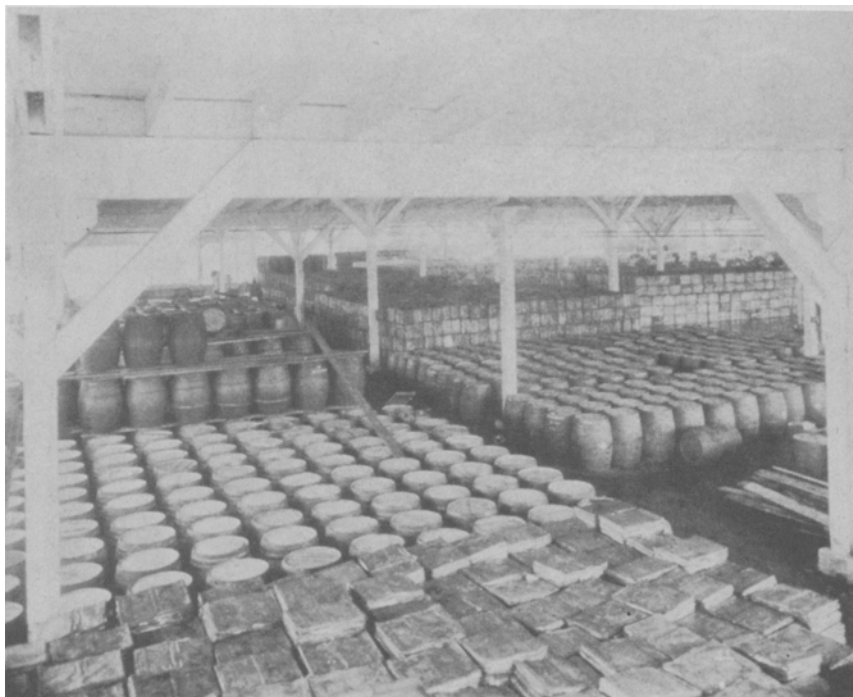
water. Needless to say, plenty of water was left in the oil at times, though it was remarkable how well it could be removed when time and opportunity permitted. Later this was all handled by machines created for the purpose, cans were moved along by conveyors surrounded by steam coils until they

reached the dumping and draining tables and from there the empty cans went to the cutting, flattening and baling machines.

With such a demand for oil as existed during the war period, and the confusion that prevailed, a marked irregularity between lots and even packages of the same lot

was inevitable. While lots, as a whole, might comply with contract limitations or standards, when subdivided on arrival here and sent to different buyers, the part that each received would frequently be quite different from the average of the whole. Sometimes a sample of 10% of the packages would be taken of a shipment on arrival, and during the numerous subsequent sales and

not the irregularity of the product, was always blamed for these differences. As many as five and six samplings might be made of a lot representing as many independent transactions without the shipment moving from the spot where it was discharged from the vessel. In the oil terminals or warehouses, barrels and cases would be piled ceiling high, and frequently had to be



*One of the fine oil transfer plants which was an outgrowth of wartime conditions. In the foreground, bales of flattened coal oil tins ready for return to the Orient. Middle and outer wharf, barrels of bean oil*

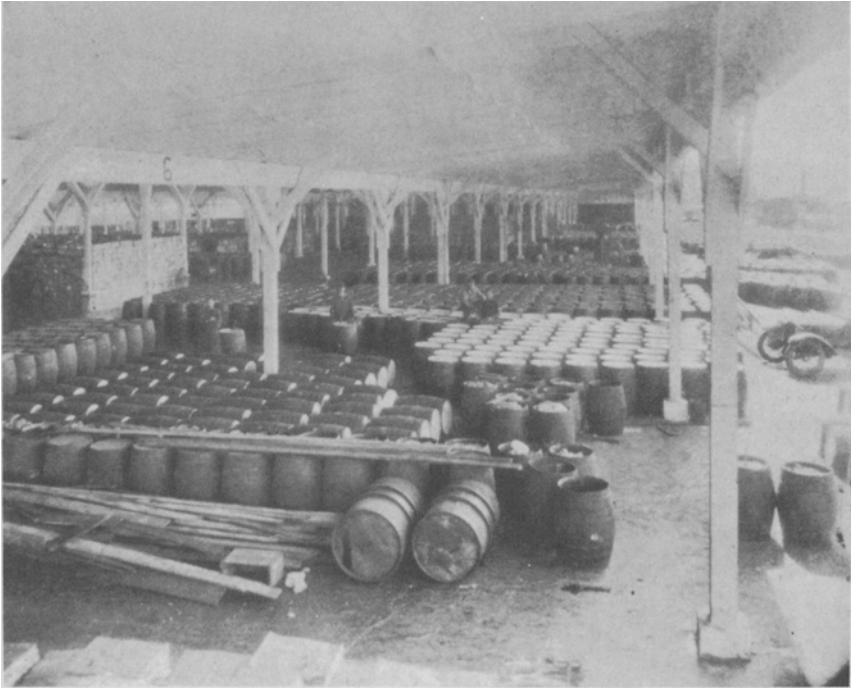
resales characteristic of the time, portions would be sampled again or several times. Each sample drawn would involve packages not previously sampled, and each sampling would vary from the first or second, and so on down the line of sales and resales, and the chemist,

pulled down several times to be re-sampled as a result of a new buyer in the case. Some of these vegetable oils, especially cocoanut, would vary so much that every individual barrel in a shipment would have to be sampled, tested for free fatty acids and segregated into the

range to which it belonged, before the importer could take the risk of selling his product. Portable laboratory equipment would on such occasions be used on the dock where the sampling and segregation took place. Such extreme irregularity, of course, did not occur frequently, but was not uncommon.

This condition naturally had its effect on tank car lots loaded direct-

tion, and as a result of these conditions, discrepancies were inevitable, and after continued disputes had arisen, the importers found it necessary for their protection to evolve a different system in order to know with certainty the average composition of the car before shipment. It was not an uncommon sight in the earlier days of this mad rush, to see two men at the



*Background, thousands of cases of peanut and other oils. This scene is typical of order and system resulting from improved methods towards end of war period*

ly from packages, as the last oil into the tank car would always predominate in the sample taken from the dome of the car, and consequently did not necessarily represent the average of the tank car as a whole. Tank cars were also usually sampled and tested at destina-

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dome of the car, trying to mix the oil with oars. Out of all this confusion grew the various sampling and other devices to overcome these difficulties. Dumping tables were established in which the oil passed into long troughs, much like those in



*Wreckage after discharge of vegetable oil cargo at San Francisco in 1920, resulting in 4 feet of oil leakage in bilge of this hold.*



*Another view of same vessel as photograph above, showing result of poor stowage and rough weather*



which cattle are fed. Some of these were arranged with mixing propellers and others with circulating devices where the oil would be pumped over from one end to the other, and by this means mixed sufficiently to be of a uniform composition. Numerous modifications or combinations of these procedures were installed, with the eventual development of immense storage capacity where the oils would finally be pumped from the dumping tables. In that way conditions were averaged and oil of a uniform and known composition resulted.

It would be impossible for anyone who has not witnessed the congestion caused by these vast oil importations, when entire ships' cargoes of mixed lots or a single kind of oil would arrive at one time and smaller shipments of 50,000 to over 100,000 cases were of almost daily occurrence, to visualize the many difficulties which confronted nearly every turn of these transactions, and as usual the chemists and their samplers came in for the brunt of all blame when anything did not come out just as was expected. But out of all the grief and difficulties in meeting contracts and conditions, much good was derived. It not only gave a great impetus to the oil industry, but developed knowledge of handling and the many uses and applications of various oils. Had it not been for the period of the war, development of this sort would have been much slower and there would not have been so many well equipped plants as exist to day, with first hand knowledge and experience of a valuable order. Pacific Coast ports, such as San Francisco, Seattle, Tacoma, Portland and Los Angeles, now have oil storage plants for handling the various oils shipped in bulk, which represent an enormous in-

vestment of money, but are most essential to the vegetable oil industry.

One form of equipment which has been junked as useless under modern conditions, is the machinery created for cutting, flattening (rolling), and baling the millions of second-hand coal-oil tins which were then returned to the Orient to be used for roofing of houses and all sorts of purposes by the Orientals, or sometimes made into smaller cans which were again returned with oil. The problem of disposing of the wooden cases, each of which held two of these cans, was met in much the same way as the problem of waste wood and sawdust in sawmills. Conveyors were installed which carried these cases to some remote point where they were dumped and burned. These fires were going day and night, and millions of oil-soaked cases were destroyed in this way. Present methods of transportation and handling have been so simplified that one or two thousand tons of bulk oil in steamers' deep tanks can be transferred directly into tank cars or storage tanks within a period of from 12 to 24 hours with very little more labor than is necessary to man and connect the pumps and attend the tank cars. It is much more economical and satisfactory in every way than the former laborious, wasteful and costly procedure, which was only economically possible as a result of market demand of a kind created by war conditions.

In the next issue, a brief sketch will follow of various oils imported on the Pacific Coast. It is not intended to cover the entire field but merely the better known oils, including fish and marine oils.

*(To be continued)*