BULK CARGOES OF OIL

By H. P. TREVITHICK

In the past few years, the methods of importing vegetable oils, particularly into the port of New York, have been undergoing considerable changes.

Heretofore the usual method of shipment has been in barrels. Cottonseed oil, olive oil, olive oil foots or sulphur oil, soyabean oil, cocoanut oil, etc., have been shipped into the port of New York in this way. In some cases, new barrels were used; but with sulphur oil, second-hand barrels were generally to be found. Besides the barrels, however, pipes, puncheons, hogsheads, and casks are used. Palm oil, particularly, is shipped in casks containing about three-quarters of a ton of oil.

In all cases, these containers have to be handled many times. Thus, when filling, the barrels, etc., are rolled, coopered, etc. Then they must be transported to the ship, taken aboard by derricks, stowed away in the hold, and stand the strains of the voyage. Arriving on this side, the barrels must be unloaded, sampled, rolled, etc.

As a result of all this handling, many of the barrels leak and all must be coopered before they can be shipped to their destination. The charges for this may run as high as $1.00 or $2.00 per barrel in the case of second-hand barrels or poor shipments, and the delay to the shipment may run from a day or two to two or three weeks. In addition to this direct expense at the port of discharge, there is the cost of the barrels, the loss by leaking, the cost of delays in handling, etc. Moreover, if the barrels happened to get loose in the ship during a storm, anything may happen from the loss of the oil in a few barrels which may crush, to the general shifting of the cargo of a ship during rough weather and the possible damage to or loss of the craft.

In recent years, particularly since the great increase in the use of oil for fuel in ships, bulk shipments have been taking the place of barrel shipments. Ships have always had ballast tanks between the double bottoms, peak tanks in the ends of the ships, etc., which have been used for the storage of drinking water, and for "trimming" the ship, etc; but these are distinctly not suitable for the shipment of vegetable oils. The "peak" tanks are generally too deep, and narrow and obstructed for satisfactory discharge through their covers. The ballast tanks have no height, are full of obstructions from the frame of the ship and are too exposed to the cold temperature of the sea, particularly in winter. They are not more than 36 to 48 inches in depth, and run the full width of the ship, exposing such an enormous area to the cooling effects of the sea that steam coils are not of much use in melting the congealed oil. In one case, we have known of a 10 per cent loss of oil in such a shipment. Further, both of these kinds of

tanks are impossible to clean satisfactorily to prevent contamination.

With the advent of oil burners, it was necessary to get large tanks for fuel storage. These tanks are generally built just aft of the pilot house and forward of the boilers. There are generally two such "deep" tanks lying athwart the ship, one on each side, and separated only by the shaft tunnel and a partition above it. Each tank is approximately 20 to 25 feet deep, 20 feet in length, and half the width of the ship in width. They hold about 400 short tons each and are equipped with steam coils, bilges of their own, discharging pipes, and valves controlling them in the boiler room, and have plenty of room on the deck and large enough hatches, etc., to facilitate the charging and discharging of the cargo. They are primarily to be used for fuel storage, of course, but as this country is a source of oil supply, usually enough fuel is purchased here for a round trip. Then, on arrival on the other side, enough of the remaining oil is pumped into the peak tanks to supply the ship for its return voyage to this side and any surplus is sold. This frees both of the "deep" tanks for cargo. These are then cleaned with kerosene, steam, lye, etc., and the valves in the boiler room sealed or "blanked" off. They are then ready for cargo.

In the last few years, cocoanut oil, sulphur oil, palm kernel oil, palm oil, soyabean oil, and tung or Chinese wood oil have been received in such bulk shipments.

The advantages of the savings resulting from such shipments have been considerable. No barrels or other containers are required, so that their cost and the cost of filling is obviated. Then there is no other expense of loading except the actual cost of pumping from storage or railroad tank cars into the ship.

Of course, no loss by leaking should occur, and no shifting of cargo during transportation can occur. Thus any loss or damage is prevented not only to this shipment, but also any loss or damage to other cargo or to the ship itself.

On arrival, this oil can be pumped directly into tank cars brought alongside the ship on floats and transported direct to destination, without any delay, and with no losses or charges due to recoopering, etc. With a fair sized pump, such as one delivering 100 or 150 tons an hour, and with several flexible delivery lines so that 3 to 5 cars can be filled at one time, such a cargo of 800 tons can be discharged, including the cleaning of both tanks, in 24 to 36 hours. In barrels, this cargo would require over 4,000 barrels, and the incidental labor charges for handling, etc., would be considerable. If they needed much re-coopering the cost could easily be increased $4,000 to $1,000. The time saved is also considerable as the cargo can be discharged and shipped to destination in such a short time.

Of course, certain precautions must be observed. The oil must be hot enough to be thoroughly liquid when discharged. No contamination

should occur if the coils are tight and the tanks are thoroughly cleaned. When the bulk of the oil has been removed, it is necessary that men use brooms, squeegees, etc., to clean between the coils and to brush down the sides to get all the remaining oil into the bilges, whence it can be pumped. If the oil has not been kept liquid during the voyage, care must be taken in heating and melting or otherwise the oil around the coils will scorch and darken before the balance of the oil is thin enough to allow circulation.

In general, however, this method of shipping large quantities of oil results in great economy of time, money, trouble, etc.

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P. S. TILSON

P. S. Tilson, one of the founders of the American Oil Chemists Society and a leading figure in the chemical profession and oil and fat industry, died on May 29 at the age of 59. For sometime previous he had been in poor health, and although he followed his custom of attending the May convention of the American Oil Chemists Society at New Orleans, he was unable to participate to any extent in the social diversions of that meeting. Shortly after his trip to New Orleans, he submitted to an operation and the week following he passed away.

Funeral services were held in Houston, from which place a great many friends accompanied the body to Bryan, Tex., where further services were held at the interment.

Mr. Tilson was graduated from Texas A. & M. college in 1888, and for some years after was connected with that College as instructor in Engineering Chemistry. In 1904 he moved to Houston and established the Houston Laboratories, of which he was the president at the time of his death. At one time he was a collaborating chemist of the U. S. Department of Agriculture, and later was Associate State Chemist for Texas. In addition to membership in the American Oil Chemists Society, he was a member of the American Chemical Society, the Interstate Cottonseed Crushers' Association, and the Texas Cottonseed Crushers' Association.

Mr. Tilson's death deprives the chemical profession and the oil and fat industry of a very dear friend and an associate whose character and attainments commanded the respect and confidence of all who knew him.