

## THE THEORY OF THE PRACTICE OF STEAM DEODORIZATION OF SAPONIFIABLE OILS

*A Review*

BY DAVID WESSON

This is a subject which has been guarded carefully for the last thirty years as more or less of a trade secret. Little has been known of the theory; or if so, it has not been published. Still less has been published about details of apparatus and the practical operation of same.

A very full treatment of the subject largely from a mathematical standpoint was published in the *Journal of the Society of Chemical Industry* for March 26, 1926, by W. Brash. The same author has a second article on the same subject in the same Journal, September 24, 1926, entitled "Application of the Counter Current Principle to the Steam Deodorization of Saponifiable Oils." The reader is advised to read the original article, only the salient points of which are here given.

The method is most generally used for the deodorization of saponifiable oils for edible use in steam distillation under reduced pressure.

It would appear that the odor and taste are both due to the same chemical substances in the oil and it is found invariably in practice that the odor is first removed then the taste. Steam distillation removes these substances. In some cases the constituents have been identified. They appear to consist largely of Ketone.

In rape oil and plants belonging to the cruciferal the odorous bodies are sulfur compounds; in the fish oils, nitrogenous.

The object of the first paper is to examine the process and indicate needed requirements for an efficiently designed apparatus. Its treatments of the stationary or unit deodorizer are distinct from the continuous.

The amount of odoriferous matter present in different oils varies. It is undoubtedly low, 0.1 to 0.5 per cent. Steam functions in the process merely as an inert gas and has no action on the volatile matter.

### Summary

The pressure of steam entering the deodorizer is approximately half the pressure of the steam supply.

The relative dimension of the apparatus and form of the outlet may be calculated from the equation given in the paper.

To shorten the time of deodorization the most important factors are low pressure in the deodorizer and high temperature of the oil.

In the application of the counter current principle which amounts to the same thing as continuous deodorization the apparatus used is a tower in which the air is admitted at the top and the steam at the bottom. The whole apparatus is maintained under reduced pressure and the oil

is withdrawn from the apparatus in a finished condition, while the odoriferous matter is carried over with the steam into a condenser at the top of the apparatus.

The advantages which may be claimed are short time of contact with the steam and economy in the use of steam.

---

## OILS AND FATS IN ANCIENT EGYPT

The following was taken from *The Analyst*, September, 1926, and will be of interest to all our readers. It consists of an extract from a paper by A. Lucas on "Problems in Connection with Ancient Egyptian Materials." The extract reads:

"Although fatty matter has frequently been found in Egyptian tombs, in jars in tombs, sooner or later decompose, and as some of the bodies clusive. This is almost inevitable, as oils and fats, unless kept under special air-tight and sterile conditions, which is not the case when placed in jars in tombs, sooner or later decompose, and as some of the bodies formed escape, either by evaporation or by soaking into the material of the containing vessel, all that the analyst has for examination is merely a portion of the products of decomposition. What is left consists of a mixture of fatty acids, and it is only by the separation, purification and identification of these and by a determination of the proportion in which each occurs in the mixture that the nature of the original oil or fat can be known, and, since what remains is generally a portion of that formed and not necessarily a representative portion, the problem may often be insoluble.

"The fatty matter often smells like rancid coconut oil or like rancid butter and, occasionally, of valeric acid, and the fatty acids identifiable are generally palmitic and stearic acids and, less frequently, oleic acid, and in one instance calcium butyrate was found. When the fatty acid consists essentially of stearic acid alone it seems justifiable to assume that the original material has been castor oil, which was well known to the ancient Egyptian, and which is one of the few oils or fats that contain little or no palmitic acid. When the fatty acids consist of stearic and palmitic acids in almost equal proportions it is possible that the original material was an animal fat, such as ox fat. There is, however, as will be realized, considerable scope for further chemical work on the subject."