

heat gently, and shake vigorously; allow to stand until the liquids separate, decant as much of the alcohol solution as possible, and then wash the residue with 2 per cent. nitric acid and finally with water. Cottonseed oils treated in this manner reacted with undiminished strength, while the olive oils which before treatment gave deep brown colorations, showed after treatment no coloration or reduction of the silver solution at all. The free fatty acids and other products of rancidity, which are evidently the cause of the brown coloration with the Bechi reagent which these oils give, are dissolved by the alcohol and removed while the reducing principle of the cottonseed oil is not affected. This method can be readily applied to lards or other fats which it is desirable to test by the Bechi reagent. The writer was able, by this method, to get very satisfactory and reliable results.

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## A STUDY OF THE BECHI TEST FOR COTTONSEED OIL.

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WHILE in the case of sesame oil the substances to which the Baudouin test is due may be said to be fairly well known,<sup>1</sup> such is not the case with the test in question. Some<sup>2</sup> consider that it is due to a sulphur compound in the oil and others<sup>3</sup> to an aldehydic body. While the evidence given by this paper is not conclusive, it was thought sufficiently interesting to publish.

The tests made by these various experimenters were repeated and confirmed; it was found that an oil heated to 260° gave neither the Bechi-Milliau test nor the Halphen test. This might indicate that the active principle of both tests was the same but for the fact that Raikow,<sup>4</sup> by oxidizing the oil with potassium permanganate and sulphuric acid, obtained an oil which gave the Bechi test but not the Halphen.

### TESTS FOR ALDEHYDIC BODIES.

400 cc. of oil were shaken with an equal quantity of strong sodium bisulphite solution for twelve hours; the oil upon separation gave the Bechi test although a longer time was required for

<sup>1</sup> Villavecchia and Fabris: *Abstr. J. Soc. Chem. Ind.*, 16, 1045.

<sup>2</sup> Dupout: *Bull. Soc. Chim.*, 13, 696; Charabot and March: *Ibid.*, 21, 552.

<sup>3</sup> Holde: *J. Soc. Chem. Ind.*, 11, 637; Wilson: *Chem News*, 59, 99.

<sup>4</sup> *Chem. Ztg.*, 24, 562, 583.

its development and it appeared in less intensity. This was repeated with similar results; in this latter case crystals separated, which on being distilled with sodium carbonate gave no aldehyde reaction with the fuchsine-aldehyde reagent.

A portion of the oil was treated with dry ammonia gas for seven hours; there was no indication of any crystalline compound of aldehyde ammonia having been formed, and the oil gave the Bechi-Milliau test with even greater intensity.

#### TEST FOR SULPHUR COMPOUNDS.

In two cases only the black compound formed by the action of silver nitrate upon the fatty acid gave off hydrogen sulphide; this was recognized by its odor and blackening lead acetate paper. If, however, sulphur compounds were present in the fatty acid sufficient to blacken silver nitrate, it would seem as if other metallic salts should show characteristic colors. Salts of cadmium, lead, copper, and mercury were tried with negative results except that with the mercury salts reduction to metallic mercury took place.

In the repetition of Dupont's work both the aqueous distillate from the unheated oil and the oil itself gave the Bechi test. This was not the case with the oil which had been heated to  $260^{\circ}$ . In conclusion, in view of the fact that bodies of an aldehydic character could not be detected in the oil by either the fuchsine aldehyde reagent, by sodium bisulphite, or by ammonia, it would seem that it was not likely that they were present. This would seem to be confirmed by Raikow's oxidation with permanganate and sulphuric acid. The evidence would seem to favor the presence of sulphur compounds.

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#### NEW BOOKS.

STUDIES FROM THE CHEMICAL LABORATORY OF SHEFFIELD SCIENTIFIC SCHOOL. EDITED BY HORACE L. WELLS. Vol. I, xi + 444 pp. Vol. II, ix + 379 pp. New York: Charles Scribner's Sons. 1901. Price, \$7.50 per set.

In consequence of the recent bicentennial celebration of Yale University, there has been presented to the world "a series of volumes \* \* \* prepared \* \* \* and issued \* \* \* as a partial indication of the character of the studies in which the University teachers are engaged." Two volumes of this series,