

Planning and Uniform Methods Committee

Work of the Society's Committees Reviewed and Commented Upon by Co-ordinating Body

By J. J. VOLLERTSEN, *Chairman*

THE Planning and Uniform Methods Committee has studied the work and reports of the Society's various committees and submits the following recommendations with respect to their work.

Detergent Committee

THIS committee has been doing good work and has been showing very definite progress. It should be continued.

Refining Committee

THE refining committee makes the following recommendations:

"Tentative Method for Refining Corn Oil:

The apparatus and general procedure shall be exactly as prescribed for hydraulic pressed crude oil, with the following exceptions: The choice of lye shall be a concentration of 16 degrees in all cases. Two refining tests shall always be made, using respectively $\frac{1}{2}$ and $\frac{2}{3}$ of the maximum amount of caustic soda permitted for hydraulic crude cottonseed oil having the same F.F.A. The soap stock may be hardened by chilling in ice water, if necessary, to permit draining the oil from the soap stock.

"Tentative Method for Refining Soya Bean Oil:

The apparatus and general procedure shall be the same as prescribed for hydraulic pressed crude cottonseed oil, with the following exceptions: Choice of lye shall be 14 degrees in all cases, and two tests shall be made using respectively $\frac{1}{2}$ and $\frac{2}{3}$ of the maximum amount permitted for hydraulic crude cottonseed oil having the same F.F.A. The soap stock may be hardened by chilling in ice water, if necessary, to permit draining the oil from the soap stock.

"Color Glasses:

We recommend that three glasses be required for use in all color readings, one colorless glass to be used as the third glass when only one yellow and one red are needed.

"We recommend that the plan of having an investigator be continued for the work of the Refining Committee, and we also recommend it to the Society for the work of other committees, where a similar study of variable conditions is to be made, as we consider it the quickest and surest way to obtain results.

"For next year's committee we recommend the following:

(a) Complete the work on Peanut Oil

(b) Investigate the refining of Coconut Oil.

(c) Investigate the effect of different filter papers and other conditions in the filtering of refined oils with regard to the effect of these conditions on the color."

The Uniform Methods Committee approve all of the above and recommend their adoption. With reference to the plan of having investigators paid by the Society to assist the various committees, it is understood that such action shall only be undertaken when in the judgment of the Governing Committee it is advisable, and if the funds of the Society will permit.

Color Committee

THIS Committee did some very interesting work and submitted several recommendations, which we will cover separately.

"1. That a standard set of Lovibond Glasses consist of the following yellow and red glasses.

Yel.: 4.0 6.0 3.0 10.0 12.0 14.0 16.0
18.0 20.0 35.0 and 50.0

Red: 0.1 0.2 0.3 0.4 0.5 0.6 0.7
0.8 0.9 1.0 2.0 2.5 3.0 3.5
4.0 5.0 7.6 8.0 9.0 10.0 11.0
12.0 16.0 and 20.0"

We do not approve the adoption of this recommendation.

"2. That the following number of glasses be used to make a color determination: Only one yellow glass, not more than two red glasses up to and including 13.0 red; not more than three red glasses above 13.0 red.

"We see no reason why the determination of grade should not be made with the above glasses instead of one yellow and one red as specified in the present rule unless this Society is prepared to find a way to supply the glasses of the exact standard. The present glasses such as 7.6 red and 13.0 red, when standardized by the Bureau of Standards, are found to be off. This necessitates the using of other glasses."

We do not approve the adoption of this recommendation inasmuch as this matter is covered by the report of the Refining Committee, which has already been adopted.

"3. That the Society adopt the Enclosed Wesson Type Tintometer. We realize that this tintometer is not satisfactory in every way, but is the most satisfactory yet designed and recommended to the Society. It is recommended to the Society only until a more satisfactory one has been designed and adopted by the Society. The most satisfactory tintometer of this type

is offered as the Emil Greiner Company's Constant Light Colorimeter."

We believe that a standard tintometer is a necessity and also that very definite specifications covering the size, inclination of the magnesia block, and all other dimensions, are needed, and would suggest that next year's committee be instructed to submit definite specifications for such an instrument.

"4. That only artificial light produced by 100 Watt Blue Frosted light Electric Bulb be allowed. It is necessary to move this change as the manufacturers have discontinued making the 75 Watt Daylight Blue Lamp."

We approve this recommendation.

"5. That the Society adopt the tube for holding the samples of oil to be examined, eliminating from the rule the glass oil sample bottles."

We approve this recommendation.

"6. Committee feels that the question of filter paper is a problem for the Refining Committee as well as the Color Committee. There is evidence that on off oils, cold pressed oils, and oils not refined 'clear' that the type of filter paper makes a great deal of difference in color. When oils are refined perfectly 'clear' the type of filter paper is not so important. At the present, it is sufficient to recommend a good heavy grade, close texture, white paper."

We approve this recommendation with the suggestion that the Refining and Color Committees for the coming year be instructed to bring in recommendations for a definite paper.

Olive Oil Committee

WE recommend that this committee be continued.

Sampler Committee

NO report was received from this Committee. We recommend that this Committee be continued with instructions that they try out the sampler at various plants and bring in a report containing definite recommendations regarding the adoption of a standard sampler.

Committee on Crude Mill Operations

THE report of this Committee contained some very interesting information but carried no recommendations which require action by the Uniform Methods Committee.

Moisture Committee

WE recommend the adoption of the oven described by this Committee, which has been used by several members of the association as official, and suggest the reporting of the moisture by the participants of the Smalley Foundation work, without taking these results into consideration in awarding prizes.

Kreis Test Committee

WE recommend the continuance of this Committee for another year.

Report of the Kreis Test Committee

IN the first phase of the committee's work, in which only three members participated, a procedure for making the Kreis Test essentially similar to that of Kerr (Ind. Eng. Chem. 10, 471-5 [1918]) was studied. It was found that this procedure readily gives reproducible results in the same laboratory over a given short period of time.

In the second and more important phase of the committee's work, samples of six wintered cottonseed oils, which had received varying exposure to air at different points in their processing, were sent to each member of the committee. These have been studied from the viewpoint of the uniformity of the Kreis Test as reported by different laboratories (tables I and II) and from the viewpoint of the possible value of the Kreis Test as an index to the degree of rancidity of the samples as received (table III) as well as the degree of rancidity developed after further exposure of the samples to air (table IV). The samples used had been selected by the chairman from original oils of good quality and were free from objectionable odor and flavor except such as were developed by exposure to air during processing. Therefore it seemed proper to consider off odor and flavor in these samples as due to rancidity, even though most of them did not possess in high degree the distinctive disagreeable odor and flavor characteristic of the last stages of rancidity.

Table I

Kreis Test as Reported by Different Laboratories on Wintered Cottonseed Oil Diluted 1:10 with Mineral Oil

Sample No.	Observer				
	1	2	3	4	5
A	Neg.	Neg.	Pos.	Neg.	Neg.
B	Neg.	Pos.	Pos.	Pos.	Pos.
C	Neg.	Neg.	Pos.	Neg.	Pos.
D	Neg.	Neg.	Pos.	Neg.	Pos.
E	Neg.	Neg.	Pos.	Pos.	Pos.
F	Neg.	Pos.	Pos.	Pos.	Pos.

The six samples were put into clean tightly stoppered bottles on March 20 and were opened and promptly examined by observers 1, 2, 4 and 5 between the dates March 27 and March 30. They were examined by observer No. 3 on April 8, but presumably not exposed to oxidation in the meanwhile. The wide discrepancies in the results obtained can scarcely have been due to change in the samples after packing.

The most significant result in the work of the committee to date is the failure of different laboratories to agree on whether the Kreis Test is positive or negative for a given oil sample.

Table II

Observer	Order of Increasing Intensity of Kreis Test Increasing Intensity (left to right)
1	A, C, D, E, F, B
2	(A C), D, E, F, B
3	C, F, E, D, A, B
4	A, C, D, E, F, B
5	A, (C D), E, (B F)
Average	A, C, D, E, F, B

(Note: The order of intensity of Kreis Test was determined in different ways by various observers, in some cases without dilution with mineral oil.)

Development of Rancidity after Exposure of Sample to Air

Observer No.	Order of Decreasing Quality after Exposure to Air Several Weeks
1	A, B, D, E, F, C
2	(A C D F), B, E
3	(C E F), A, B, D
4	A, F, (B E), C, D
Average	A, F, B, E, C, D

(Note: The time of exposure was the same for all samples of any one observer, but not the same for all observers.)

Table III

Observer No.	Order of Increasing Rancidity or Decreasing Quality Decreasing Quality (left to right)
1	A, B, D, F, E, C
2	(A C D F), (B E)
4	A, F, E, B, D, C
4	A, F, E, B, D, C
Average	A, B, F, (E D), C

Table IV

The average grading of the samples fails to disclose any correlation between intensity of Kreis Test and rancidity or quality of the oil as judged by flavor, but no definite conclusion on this point can be drawn from the erratic results which have been obtained. Obviously further work will be required if the committee is to accomplish the purpose for which it was appointed, namely, to determine the value of the Kreis Test as an index to the degree of rancidity. Up to the present, it is even uncertain whether the Kreis Test can be so standardized as to give reproducible results in different laboratories.

A. S. RICHARDSON,
Chairman, Kreis Test Committee

Report of the Olive Oil Committee

We have had before us the problem of differentiating between virgin olive oil and refined olive oil by the identification of minute quantities of soap in refined olive oil and the absence of soap in virgin olive oil. The spectroscope for sodium, and the microscope for sodium chloride, were the basis of our plan for identifying the sodium from soap. We have also had before us the problem of differentiating between virgin olive oil, and mixtures of virgin olive oil with refined olive oil, by the use of ultra violet light.

Under date of December 28, 1928 the Chairman had a letter from Dr. G. S. Jamieson, oil, fat, and wax laboratory, U. S. Dept. of Agriculture, Washington, D. C., stating that his assistant Mr. McKinney did not find the minute quantity of sodium from the soap in refined olive oil, although Mr. McKinney is thoroughly experienced in making micro-analysis. Under date of February 11, 1929 the Chairman received a letter from M. L. Sheely, Chief Chemist, Armour Soap Works, Chicago. He also did not find the minute quantity of sodium from the soap in the refined olive oil. On March 10th the Chairman visited Dr. Jamieson in Washington. From our conversation we agreed that the method for finding sodium chloride is too delicate for routine analysis.

On April 9th the Chairman visited M. F. Lauro and Wallace H. Dickhart, both of the Bureau of Chemistry, New York Produce Exchange, New York City. Mr. Lauro identified sodium by means of its double salt with uranyl acetate, triangular crystals growing to light yellow tetrahedra under the microscope. From another portion he also identified sodium by the double sulphate of soda and bismuth, showing slender prisms or rods under the microscope. Mr. Dickhart has developed a method using alcoholic solution of sulphuric acid and alcoholic solution of furfural. A red color is produced. The virgin olive oils turn foggy, while the refined remain clear. The color is then removed by titrating with n/10 sodium thiosulphate. Five different virgin olive oils and five different refined olive oils were tested. The virgin oils all had a higher thiosulphate number than the refined oils. Dickhart will have in the near future a paper in detail for our Journal. It is planned by our committee to repeat these interesting methods, and further report will be given. Meanwhile several members of the Olive Oil Committee are co-operating with Sidney Musher of the Pompeian Corporation, Baltimore, repeating his extensive work on various olive oils using the ultra violet ray for the detection of refined in virgin olive oil. When his work has been repeated by these members a further report shall be given.

LOUIS M. ROEG,
Chairman.

Position Wanted—Man with 18 years' experience in the refining and bleaching of oils and in the manufacture of soaps. For further information, address M. A. W., P. O. Box 67, Milwaukee Junction Station, Detroit, Mich.