

cleanliness. A relatively small number of bubbles per minute, just above counting rate, appears to give an adequate supply of oxygen as well as sufficient stirring.

SUMMARY

The results of the experiments herein reported indicate that the

rate of air flow used in aerating the oil samples under the conditions used, may be varied within wide limits, namely from 2.5 to 10 liters per hour, without impairing the range of accuracy inherent in the method.

The results of the experiments wherein the shape and type of jet

orifice was varied over a greater range of sizes and types than is usually found in a laboratory set-up for aerating oils, show that this wide variance has no appreciable effect upon the accuracy of the method.

(See Discussion of this paper in the July issue.)

REPORT OF THE

UNIFORM METHODS AND PLANNING COMMITTEE OF THE AMERICAN OIL CHEMISTS' SOCIETY

MEMPHIS, MAY 24, 1935

THE Uniform Methods and Planning Committee has had several meetings in Memphis for the discussion of the various reports submitted, and the chairman is gratified that the full membership of his committee could be present.

Seed Analysis Committee:

The Committee on Analysis of cottonseed has studied the type of mill used for grinding and the determination of lint on seed. No changes are proposed but some progress has been made. The Uniform Methods and Planning Committee suggests that next year's committee continue the study of the methods which were undertaken during the present year.

Free Fatty Acids Committee:

The committee on free fatty acids states that the fifteen mesh screen previously recommended is unobtainable. It suggests the following changes:

(1) "Grind the meats in a Russian No. 1 food chopper equipped with a sixteen tooth plate. Return the first few grams that pass the knives to the hopper to insure proper grinding."

The Uniform Methods Committee approves this change and moves its adoption.

The motion was properly seconded and the change accepted by the Society.

(2) Instead of specifying one and one-half hours on steam bath, change the method to read, "Allow to remain on steam bath until no trace of solvent remains."

The Uniform Methods Commit-

tee approves this change and moves its adoption.

The motion was properly seconded and the change accepted by the Society.

(3) Delete the use of 10cc. petroleum ether in the determination of free fatty acid.

The Uniform Methods Committee approves this change and moves its adoption.

The motion was properly seconded and the change accepted by the Society.

Stability Committee:

Owing to recent developments in the study of the technique of the peroxide method, the Uniform Methods Committee feels that the method as proposed should not be adopted as tentative at the present time, but should be remanded to the committee for further study.

Moisture Committee:

This committee has done interesting work on the study of various moisture ovens. The Uniform Methods Committee recommends to the incoming president that this committee be continued and be requested to continue the further study of various types of ovens.

Color Committee:

The Color Committee made the following recommendation for the reading of the color of crude coconut oil:

"Crude Color:

Melt the oil and filter through one thickness of approved filter paper at a temperature not above 35° C. until completely free from turbidity. Read the color using

the following ratios of yellow to red:

Up to 3.9 red	6 Yellow to 1 Red
4.0 to 4.9 red	25 Yellow to 1 Red
5.0 to 5.9 red	30 Yellow to 1 Red
6.0 to 6.9 red	35 Yellow to 1 Red
7.0 to 7.9 red	40 Yellow to 1 Red
8.0 to 10.9 red	50 Yellow to 1 Red
11.0 to 14.9 red	70 Yellow to 1 Red
15.0 to 19.9 red	100 Yellow to 1 Red
20.0 and above	150 Yellow to 1 Red

If the above ratios fail to give a satisfactory match, this fact should be noted and a second reading made, using the amount of yellow required for a good match. Report *both readings.*"

The Uniform Methods Committee approves this change and moves its adoption.

The motion was properly seconded and the change accepted by the Society.

Color Glass Development Committee:

This committee has completed a very valuable piece of work. It has found a company which is willing to take our Lovibond glasses and grind them until they are exactly standard with the markings which appear on the glasses. The Uniform Methods Committee recommends and moves that referee chemists be requested to have the following red glasses prepared by the method described:

2.5
7.6
12
16
20

The motion was properly seconded and the change accepted by the Society.

Fat Analysis Committee:

This committee has given us a progress report and is working on methods which should be clarified and standardized.

Crude Mill Operations Committee:

While no definite report was submitted by this committee, several of the papers on the program were a result of its activities. The Uniform Methods Committee recommends to the incoming president that this committee be continued.

Sampling Committee:

The Sampling Committee in its report made the following statement:

"Suitable bands or rings were substituted for handles on the official oil sampler and were tried out by some members of the committee. They were found to be less convenient than the handles, however, and the latter are recommended as standard equipment on the sampler."

The Uniform Methods Committee concurs in this recommendation and moves its adoption.

The motion was properly seconded and the change accepted by the Society.

The Sampling Committee has covered very thoroughly methods for the sampling of oils and fats in ships' tanks and shore tanks. We will not read the complete method as the report has already been presented to the Society. The Uniform Methods Committee approves these methods as official (they had already been adopted as tentative) with such changes in wording as have been proposed this year, and moves their adoption.

The motion was properly seconded and the change accepted by the Society.

The Refining Committee:

The Refining Committee recommends that in the method for coconut oil the amount of salt to be used shall be 0.10% for each 1.00% of free fatty acid, and that the amount of lye be reduced from 1.25 times the free fatty acid to 1.10 times the free fatty acid.

The Uniform Methods Committee approves this change and moves its adoption.

The motion was properly seconded and the change accepted by the Society.

The Refining Committee recommends further work on the methods of refining crude soya bean

oil, and this recommendation is approved by the Uniform Methods Committee.

The Refining Committee recommends that the incoming committee continue the investigation of various types of filter paper and prepare a specification which will obviate the mentioning of brand names.

The Uniform Methods Committee approves this recommendation.

The Refining Committee has rewritten the methods for the refining of vegetable oils in such a way that they are all included in one method, exceptions being noted where the procedure for certain oils differs from that used on cottonseed oil. This has also been presented to the Society in the report of the committee.

The Uniform Methods Committee approves this change and moves its adoption tentatively for the coming year.

The motion was properly seconded and the change accepted by the Society.

Sulphonated Oils Committee:

The report of this committee consisted of an outline of the work in progress. We feel that this work is in good hands and satisfactory methods will gradually be developed.

Smalley Foundation Committee:

As usual, most of the collaborators ended up the year with exceptionally high grades. The work of the Smalley Foundation has established itself on a firm foundation and any suggestions as to changes in number of samples has met with so much opposition that this in itself points to the high regard in which the work is held by the collaborators.

Olive Oil Committee:

The Olive Oil Committee makes a report of progress. About two years ago the Crismer test for the

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

And Associated Societies

OFFICE OF THE PERMANENT SECRETARY

Smithsonian Institution Building

Washington, D. C.

July 12, 1935

Dear Mr. Robinson:

At the Minneapolis meeting the following communication from the Secretary of State was presented to the council:

"The Government of the United States has been invited to take part officially in the Seventh American Scientific Congress, which is to be held in Mexico City from the 8th to the 17th of September of this year. It is expected that this invitation will be accepted and that an official delegation will shortly be appointed.

In addition, however, to inviting this Government to appoint official delegates to the Congress, the Mexican Government has requested that information concerning the Congress be brought to the attention of the universities, learned societies, and scientific organizations in the United States in the hope that a large number of American scientists will wish to attend the Congress and take part in its proceedings. A copy of the program of the Congress is enclosed.

The Department would, therefore, appreciate anything that you may be able to do to bring notice of the forthcoming Congress to those to whom it would be of interest."

The council voted to cooperate to the fullest extent in this matter. The president was requested to appoint two delegates and I was instructed to send a letter to each of our affiliated and associated societies requesting them also to take notice of the affair by appointing delegates and to bring it as prominently as possible to the attention of their organizations in the hope that the various technical societies including both pure and applied sciences might be well represented at the Congress in Mexico City, and might contribute to the program of the Congress in appropriate fashion.

I trust it may be feasible for you to do something in this direction. In case you find it possible, please inform the Department of State and send a record of your action to the office of the permanent secretary in order that he may be advised of the progress made toward the holding of the Congress.

It has long been the expectation of the Association that at no very distant date we should be able to hold a meeting in Mexico City. The establishment of cordial relations between the Association and its affiliated organizations and the scientists of Mexico and other countries participating in this Congress will be an important step toward the accomplishment of this end.

Very sincerely yours,

HENRY B. WARD,

Permanent Secretary.

MR. A. A. ROBINSON, President,
American Oil Chemists' Society.

purity of olive oil was adopted as tentative. The Uniform Methods Committee recommends and moves that the Crismer test be now adopted as an official method of the Society.

The motion was properly seconded and the method accepted by the Society.

You heard a paper on the subject of detection of soap in refined oil. The Uniform Methods and Planning Committee recommends to the

incoming president that he appoint a committee for the study of a method for soap detection in oil.

As chairman of the Uniform Methods and Planning Committee, I want to say that the work this year seemed to have been conducted with more energy and expedition than heretofore. With very few exceptions all of the committee reports were in the hands of the chairman prior to the convention date,

and in most cases it was possible to send duplicate copies to the members of the committee for study prior to the meeting. We feel that the committee chairmen should be commended for their zeal.

Egbert Freyer
R. C. Hatter
M. L. Sheely
H. P. Trevithick
J. J. Vollertsen,
Chairman.

THE APPLICATION OF SOLUBLE OILS IN THE PROCESSING OF TEXTILES

By **RAYMOND A. PINGREE***
The United States Finishing Company

A PAPER PRESENTED AT THE 26TH ANNUAL MEETING OF THE AMERICAN OIL CHEMISTS' SOCIETY AT MEMPHIS, MAY 23-24, 1935

I SHALL limit the subject of this paper to a general discussion of the various uses for oils and fats in the processing of cotton and rayon, and especially to their application in the finishing of cloth composed of these fibers. I shall attempt to show how the chemical and physical characteristics of oils determines their fitness or unfitness for the processes in which they may be applied.

The major outlets for oils in the textile industry may be divided into three general classifications: first, in the preparation of yarn to improve its weaving, knitting or finishing qualities; second, in scouring, dyeing and printing to insure wetting, penetration and levelness; and third, for finishing the cloth to produce the desired appearance and feel and, consequently improve the "merchandisability" of the fabric.

Regardless to which of these three uses the oils are to be put, it is the general practice to apply them to the yarn or cloth in an aqueous medium. These oils must, therefore, possess the property of dispersing readily in water. The best way to prepare oils intended for textile use, so that they will be miscible with water and still retain many of the desired "oily" properties is to treat them with sulfuric acid, thereby forming sulfo-compounds which are usually soluble in water in all proportions. Many of these sulfonated oils have the prop-

erty of being able to carry varying amounts of raw oil, either saponifiable or mineral, into emulsion with themselves. This type of compounded oil has found extensive use in the preparation of yarn for knitting and weaving, and also in the finishing of cloth.

Due to the fact that practically all processing oils used in the textile industry consist of either sulfonated oils or mixtures of sulfonated and raw oils, I would like to briefly touch upon the manufacture of this type of modified oil and to mention some of its important characteristics.

The past several years have witnessed an increasing demand upon the sulfonated oil manufacturer for products of superior qualities, such as oils which are resistant to the action of magnesium and calcium salts, and to acids, alkalis, and other strong electrolytes; oils which are proof against oxidation and the subsequent development of discoloration and objectionable odors; and oils which will have no appreciable effect upon the shades of some of the more sensitive dyestuffs. There are many other specifications which sulfonated oils are now called upon to meet. As a result of these demands, the manufacturer has developed oils which now meet every condition imposed upon them by the industry. These new developments have emphasized the need for uniform and standard methods

for the analysis and grading of sulfonated oils. I might mention at this time that a study is now being made by a committee appointed by your society which is working in conjunction with a similar committee of the American Association of Textile Chemists and Colorists with the object of standardizing methods of analysis and grading of sulfonated oils.*

SULFONATION PROCESS

If each saponifiable oil consisted of a single organic compound, or if they always contained the same mixture of compounds in the same proportion, or if the reaction between sulfuric acid and these oils proceeded in regular fashion along one line, then the manufacture of sulfonated oils would be greatly simplified. The unfortunate part is that naturally occurring oils do not possess these properties and, consequently, the sulfonator is faced with innumerable side reactions in his process with which he must cope.

The sulfonation process usually consists of three steps: first, sulfonation; second, washing; and third, neutralization. When concentrated sulfuric acid is allowed to react with a saponifiable oil under definitely controlled conditions, there

*Reports of these committees: Oil and Soap, Vol. XI, No. 11, p. 229 (1934); American Dyestuff Reporter, Vol. XXI, No. 24, p. 667 (1932); *Ibid.*, Vol. XXII, No. 24, p. 695 (1933); *Ibid.*, Vol. XXIII, No. 11, p. 290 (1934).

*Member: Committee on Analysis and Grading of Sulfonated Oils, American Oil Chemists Society; Committee on Analysis and Grading of Sulfonated Oils, American Association of Textile Chemists and Colorists.