

## Report of the Committee on the Determination of Stability of Edible Fats and Oils

### Personnel:

- E. W. Eckey, Procter & Gamble Company
- J. W. Flynn, Lever Brothers Company
- A. H. Gill, Massachusetts Institute of Technology
- W. H. Irwin, Swift & Company
- W. G. McLeod, Canada Packers, Ltd.
- A. A. Robinson, Wilson & Company
- J. J. Vollertsen, Armour & Company
- T. L. Wheeler, Arthur D. Little, Inc.
- F. C. Vibrans (Chairman), Institute of American Meat Packers

As indicated in our report a year ago, after a study of the accelerated methods reported in the literature for judging the stability of edible fats, and after communicating with many laboratories which make stability tests on fats and oils, at least a majority of the committee, concluded that the active oxygen or peroxide test developed by Lea, Taffel & Revis, Kilgore and Wheeler and as used by Swift and Company has greater possibility of standardization than any of the other accelerated tests that have been suggested for estimating the keeping quality of fats and oils. The method has been described in detail by Messrs. King, Roschen, and Irwin in our Journal, OIL AND SOAP, June, 1933, pages 105-109, so it will not be necessary to repeat it here. It is stressed, however, that the test should be used as described and too much care cannot be exercised in cleaning the apparatus.

Experience in a number of laboratories have demonstrated that when fats and oils are blown with air under the conditions specified in the peroxide test organoleptic rancidity does not become apparent at the same peroxide concentration in each fat and oil. For example, lard is rancid to the nose when it contains approximately 20 milli equivalents of peroxide per 1,000 grams of fat. Refined and deodorized cottonseed oil, on the other hand, is not rancid organoleptically, when aerated under the conditions specified for this test, until the peroxide concentration reaches about 125 milli equivalents per 1,000 grams of oil.

To assist your committee in its work, Mr. Irwin kindly supplied it with the results of his experience which indicated that the proper end point for the different types of fats and oils the committee had planned to test are as follows:

- For lard, 20 milli equivalents per 1,000 g. of fat
- For hydrogenated shortenings, 75 milli equivalent per 1,000 g. of fat
- For compound, 100 milli equivalents per 1,000 g. of fat
- For CSO salad oil, 125 milli equivalent per 1,000 g. of fat
- For corn salad oil, 125 milli equivalent per 1,000 g. of fat

These end points were used by the co-operating laboratories when they tested samples send to them.

There are data in the literature, cf. OIL AND SOAP, June, 1933, which demonstrate that laboratories using this method and apparatus show very good agreement. To get further data on agreement between laboratories the committee distributed among its members, who were equipped to make the test, 9 samples of fats and oils to be tested for stability by the peroxide method. Detailed instructions accompanied the samples stating how they should be stored, melted, and analyzed so the data obtained would

be comparable. Six laboratories tested the samples and submitted data.

A summary of these data are as follows:

Sample	—Laboratories—					
	1	2	3	4	5	6
	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.
A lard .....	7	7	4	4	6	6
B lard .....	12	12	6	5	12	12
C lard .....	20	17	15	9	18	22
D hydrogenated shortening.....	19	19	*	16	21	23
E hydrogenated shortening.....	35	35	40	24	34	42
F compound .....	4	4	4	3	4	5
G compound .....	10	9	9	7	9	11
H cottonseed salad oil.....	10	11	7	9	10	10
I corn salad oil.....	8	8	5	7	8	10

\*Sample broken on arrival.

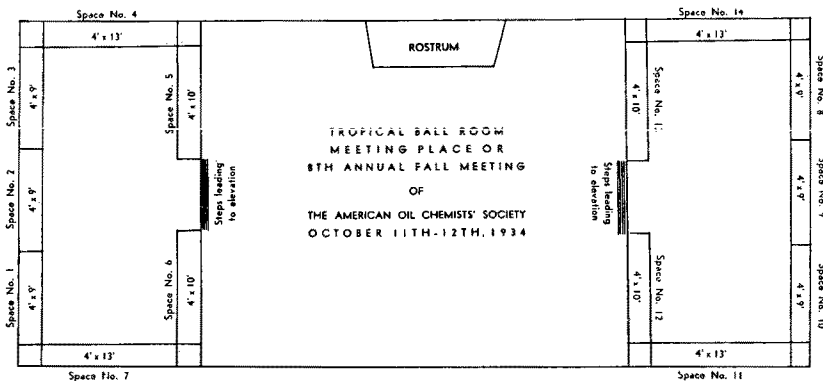
Inspection of these data indicate very good agreement between the four laboratories which regularly use this method for testing stability; namely, Armour and Company, the Institute of American Meat Packers, Swift & Company, and Wilson and Company. The data submitted by the Procter and Gamble Company and Lever Brothers Company are not in such good agreement. The explanation appears to lie in the fact that in both in-

stances the laboratories had just been equipped to make the test and presumably some factor contributing to low results is present in both instances. Nevertheless, since the data as a whole represent the results of the co-operative study they all must be considered in this report.

Since the data on co-operative samples are not conclusive, and are not in as good agreement as other data by the same method found in the literature indicate they should be, there is nothing for the committee to do but investigate the method further before it can make a final report.

Respectfully submitted,  
(Signed) F. C. VIBRANS, Chairman.

# EXHIBITS AT THE 8TH ANNUAL MEETING



For four consecutive years the Chicago Convention Committee of the American Oil Chemists' Society has promised the membership a bigger and better meeting than ever before, and year after year they have made good by providing a really improved program of worth while technical and practical papers as contributions to the Science and Industry which they serve, as well as new and more pleasing entertainment features.

And so when the Committee now announces that the 1934 meeting will mark a new high spot in better programs and will provide far better entertainment than in former years, we believe them, whole-heartedly.

This 1934 meeting will feature practical papers on the program which will

bring in plant executives as well as chemists, so every one who has exhibited before certainly cannot afford to miss this year's meeting and those who did not exhibit with us last year will find it doubly beneficial to exhibit this year.

As an innovation this year, the convention will be recessed and fully stopped, and those attending will be asked to visit each exhibitor's booth.

The 1934 meeting will be a real intimate meeting, self-contained and without distractions, as it will be held at the Medinah Michigan Club and the meetings will be held in the Tropical Ballroom, and the exhibits will again be right in the meeting room—this time on the elevated platforms which are located at either end of the room. Four-

teen exhibition spaces are available, as listed and numbered, in the accompanying illustration. Each space will be sold at the nominal price of ten dollars, but any exhibitor may purchase more than one space, if desired.

Spaces will be reserved in the order received, so in making reservations please indicate two or more choices, and send in your reservations today, to

John P. Harris, Treasurer,  
The Chicago Convention Committee,  
205 W. Wacker Drive, Chicago, Illinois,

and make all checks payable to The American Oil Chemists' Society.

Every exhibitor is welcome to participate in the meeting and to attend all of the entertainment features, which will include the now justly famous bowling tournament under the able direction of Al King, and the annual golf tournament, which Dr. L. M. Tolman will direct, and there will be a dinner dance followed by a bridge party in the city's most beautiful ballroom.

Two hundred chemists and executives are expected at this meeting, so positively don't fail to send in your reservations for space early, as only a very limited space is available and it is certain to be taken quickly at this very reasonable price.

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# THE CHICAGO CONVENTION

*(Continued from page 167)*

our meetings, and this year will be no exception.

The Local Committee, consisting of W. H. Irwin, chairman, J. J. Vollertsen, L. M. Tolman, A. W. Putland, A. A. Robinson, M. L. Sheely, R. C. Newton, A. E. MacGee and A. E. King are putting a great deal of work into the plans for this meeting and will welcome correspondence regarding it or any questions which our members or friends have to ask regarding the details. Such correspondence can be addressed in care of OIL AND SOAP.

Among other bits of information is the statement that Chicago's sunshine record in 1933 exceeded that of Los Angeles and that its normal maximum temperature for three Summer months is 78 degrees.

While the 1934 edition of A Century of Progress is described as the greatest show of its kind ever staged, prospective visitors are reminded that outside its gates are to be found the means of a glorious vacation. Among the items listed are 250 golf courses, 30 miles of lake front and bathing beaches, 8,000 acres of parks and playgrounds, 500 miles of boulevards and wide streets, the many cultural institutions and public places of entertainment.

The invitation is alluring and all the stronger for not being overdrawn. That visitors always find more pleasure and profit than they expected to find in Chicago is its best advertisement.