

# Report of the Uniform Methods Committee—1951

1. At the San Francisco meeting, on September 27, 1950, the only matter presented to the American Oil Chemists' Society for official action was a recommendation by the Glycerin Analysis Committee that Tentative Method Ea 6-49, known as the Periodic Acid Oxidation Method, be withdrawn and replaced by a new Tentative Method Ea 6-50, in which glycerin is determined by use of sodium periodate as the reagent. This action was approved by vote of the business meeting.

2. At New Orleans, on May 3, 1951, the following recommendations, made by technical committees and approved by the Uniform Methods Committee, were adopted by the Society:

a) SEED AND MEAL ANALYSIS COMMITTEE

*Official Method Ab 3-49. Oil in Peanuts*

Under A—Apparatus, and C—Procedure, it is recommended that the sliced peanut kernels be mixed by use of the velocity mixer, before the analytical sample for oil determination is drawn, and that this method be continued as Official.

*New Method. Screen Test of Soyflour*

Because of variability in fat content the ordinary brushing and/or shaking procedures for screen size are not suitable. A method has been developed which involves the use of a fat solvent,  $\text{CCl}_4$ , and washing the flour through a standard screen. This method is an adaptation of at least two somewhat similar methods, which are in limited current use, and one of which appears in the Handbook of Methods of the Soyflour Association.

b) CELLULOSE YIELD COMMITTEE

*Official Method Bb 3-47*

Since cottonseed linters and hull fiber are now being processed with cellulose yields in the neighborhood of 50% compared with the 70% and higher of a few years ago, and since these shorter fibers form a much closer mat on the wire of the yield washer, extra precautions are necessary in the washing operation. It is recommended that Section C-6, under Procedure, be rewritten to amplify and clarify this portion of the analysis. This has been done, and the change has been validated by adequate cooperative work. The method will be continued as Official.

c) SPECTROSCOPY COMMITTEE

*Tentative Method Cd 7-48*

During the past year the Spectroscopy Committee has made extensive studies of the spectrophotometric procedure for polyunsaturated fatty acids in the light of new constants obtained on pure unsaturated acids prepared by chromatographic methods rather than the usual bromination, separation, and subsequent debromination techniques. Acids prepared in this manner are believed to be more nearly identical with those occurring in normal oils. Some investigation has been made into time for alkali isomerization, and an effort has been made to simplify the analysis by omitting non-essential measurements. The recommendations include many changes in the equations used for calculation of composition but no material changes in apparatus or operation. The Scope of the method requires further clarification, and the chairman has been requested to rewrite this section to meet the approval of his committee as well as that of the Uniform Methods Committee. (Note: This has been done and the revision has been approved.) The tentative status of this method will remain unchanged.

3. At Chicago, on October 9, 1951, the business meeting of the Society voted approval of the following recommendations made by technical committees and the Uniform Methods Committee:

a) FAT AND OIL ANALYSIS COMMITTEE

*New Methods for Drying Oils*

These were all proposed for adoption as Tentative and are as follows:

- Ka 9-51. Iodine Value
- Ka 10-51. Ash
- Ka 11-51. Acetone Tolerance

*New Methods for Lecithin Analysis*

- Ja 5-51. Total Phosphorus
- Ja 6-51. Acid Value

Both are proposed as Tentative.

*Changes in Existing Tentative Methods. Drying Oils*

- Ka 6-48. Change in Viscosity Table
- Ka 5-47. Change in Definition of Specific Gravity (see below)

These methods will remain Tentative.

*Changes in Existing Official Methods*

- Ce 10a-25. Oils and Liquid Fats
- Ce 10b-25. Solid Fats and Waxes

These methods are to remain Official with a change in the Definition of Specific Gravity to read: "This method determines the ratio of the weight of a unit volume of the sample at 25°C. to the weight of a unit volume of water at 25°C."

b) OIL COLOR COMMITTEE

*Tentative Method Cc 13c-50*

Section C. Calibration of the Spectrophotometer, in the Photometric Method, has been revised to consist of eight paragraphs instead of the present four. The purpose is to insure a better adjustment of the instrument before its use in color measurement. The method will remain Tentative.

c) GLYCERIN ANALYSIS COMMITTEE

*Tentative Method Ea 6-50*

A number of changes were proposed in the Sodium Periodate Oxidation Method. Though each of these, in itself, was of minor nature, the total required extensive revision in order to avoid ambiguity. The uniformly excellent results obtained with this method in cooperative work amply justify the committee recommendation that it be adopted as Official.

The Uniform Methods Committee wishes to thank each technical committee chairman and the members of his committee for their efforts during the past year toward improvement of A.O.C.S. Methods. The results obtained are worthy of our highest commendation. At the same time we note that a regrettable laxity has developed, perhaps unconsciously, in presenting reports and recommendations to the Uniform Methods Committee with sufficient time in advance of meeting dates to permit adequate study of the effect of proposed changes in existing methods and the advisability of adopting new methods. As a consequence we feel compelled to warn that, unless this orderly procedure is followed in the future, we cannot approve such reports and recommendations for immediate action by the Society except in cases of extreme emergency. We hesitate to establish a dead-line, but such action will be necessary unless this warning proves effective.

### Bleaching Earth Supplies

The task of supervising the replenishment of our stocks of Official Natural and Activated Bleaching Earths has been assigned to the Bleaching Methods Committee. The selection and testing of the new supplies is proceeding smoothly under the direction of T. C. Smith, chairman of the Bleaching Methods Committee, who is working in close cooperation with George Clark Jr., of Bennett-Clark Company, and

A. D. Rich of the Filtrrol Corporation. Containers for packaging 8,000 four-pound cans of the Natural Earth and 2,000 of the Activated Earth have been obtained and work of testing for uniformity of the lots chosen is well underway. The discovery of an inventory error by our distributor has relieved somewhat the urgency for replacement of the Natural Earth so it now appears that thoroughly tested stocks of both types will be available well in advance of probable exhaustion dates.

It will be recalled that the Society approved a recommendation of the Uniform Methods Committee, made to the Atlanta Meeting in May, 1950, that future stocks of Natural Earth should be of U. S. origin. The wisdom of this decision is becoming quite apparent since a survey of our supply of Official Natural Bleaching Earth, bearing the 5% dosage label, showed some indication of non-uniformity and the Governing Board authorized replacement of all cans, which had been issued within the three-month period

prior to the normal expiration date of July 31, 1950, of this lot of earth. This was done, at no cost to the purchaser, using as a basis the record of sales by the Chicago Office. According to records of Central Scientific Company, the 5% lot of earth was exhausted before the expiration date of July 31, 1950. Since then only the 5.67% earth has been issued and constitutes our sole remaining supply. Thorough tests have shown this stock to be entirely uniform in bleaching potency.

With a domestic source of supply there is every reason to believe we need have no fear of a recurrence of this unfortunate experience. Every precaution is being taken to insure the complete uniformity of the supply now being processed. The equivalent dosage values will be certified by both the Chemists' Committee of the N.C.P.A. and the Technical Committee of the N.S.P.A. before any is issued as A.O.C.S. Official Bleaching Earth.

J. T. R. ANDREWS, chairman.

## Pre-Treatment of Peanut Kernels for Effective Skin Removal

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COLOR is a major factor in the acceptance by industry of solvent-extracted meals and proteins processed from peanuts. Objectionable dark color in these products has been attributed by Stansbury *et al.* (10) to the presence of certain tannin pigments in the skins. Fontaine *et al.* have reported a rather extensive investigation of the color of peanut proteins (3). Burnett has demonstrated that the darkening effect of the skin pigments on the protein can be practically eliminated, without removal of the skins, by the treatment of the kernels with dilute sodium hydroxide solution (1, 2). Obviously, complete removal of the skins is a satisfactory solution to the problem of color in the meal and protein. But the commercial practice of mechanically blanching peanut kernels for the confectionery trade involves roasting them at relatively high temperatures, which denatures the protein considerably (7).

A method of pre-treating the kernels by water-dipping and drying at low temperatures prior to mechanical blanching to remove the skins is described, and results obtained in its application to the various commercial grades of shelled Spanish peanuts (U. S. No. 1, U. S. No. 2, and oil mill stock<sup>2</sup>) are given. The term "blanching" is used throughout this report to indicate subjecting the kernels to the mechanical action of a standard split-nut peanut blancher. The optimum process conditions were established for removing 98% or more of the skins from U. S. No. 1 shelled peanuts. The color of protein prepared from treated shelled peanuts of this grade compared favor-

ably with light-colored peanut proteins prepared by other methods.

### Determination of the Percentage of Skin Removal

To evaluate the effectiveness of separation of skins from kernels, a method was devised for the estimation of the percentage of skins removed. A 100-g. sample of shelled peanuts was taken, and any kernels containing skins were separated, weighed, and counted. These kernels were divided into fractions estimated to have complete, half, one-third, and one-fourth skin coverage, etc. For the calculation, kernels with skins partially removed were converted to equivalent kernels with 100% skins, i.e., four kernels with one-fourth skin coverage were considered equivalent to one kernel having 100% skin.

Calculation:

$$\text{Percentage of skin removal} = 100 - \frac{\text{No. of equivalent kernels with 100\% skin}}{\text{Total no. of kernels containing skin}} \times \text{Wt. of total kernels containing skin.}$$

### Experimental and Results

*Preliminary.* U. S. No. 1 shelled Spanish peanuts were used in experiments to determine the best conditions for maximum skin removal by water-treatment, drying, and blanching. Important variables studied were the effects of moisture remaining after dipping and after drying, dipping and drying temperatures, different methods of heating without dipping, and overnight moisture equilibration prior to blanching.

In general: results (Table I) showed the following optimum conditions for de-skinning peanut kernels by the water-treatment, drying, and blanching process: dipping in water at room temperature (86°F.) to gain moisture of at least 20% of the original weight; forced air-drying of the dipped peanuts to obtain a

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<sup>2</sup>The grading and chemical analyses of the various lots of commercial peanut kernels used in these experiments were reported in a previous publication (8) dealing with the removal of objectionable skin color by the lye treatment. U. S. No. 1 and U. S. No. 2 shelled kernels are essentially whole and split kernels, respectively. Oil mill stock kernels consist of small kernels, shrivels, pieces, and damaged kernels rejected during grading operations.