TABLE III

Stability of the Cottonseed Oils

Characteristic	Crude			Refined and Bleached		
	Gland-containing	Low-gland	Glandless	Gland containing	Low-gland	Glandless
Total tocopherols, %	0.032	0.029	0.028	0.026	0.021	0.023
Peroxide values, m.e.	2.3	17.6	14.3	13.1	11.7	11.8
Stability, A.O.M., hr.[a]	18.7	8.2	7.8	6.7	4.8	5.8

[a] Time necessary to reach peroxide value of 100 m.e./kg. at 97.7°C.

a relatively reactive surface. The initial peroxide values of the oils bear out this supposition.

Probably because of the presence of pro-oxidants and oxidation prior to the tests, the stabilities of all except one sample were low. The crude oil obtained from the gland-containing seed had a normal keeping-quality. This crude oil undoubtedly was more resistant to oxidation because of the presence of gossypol, which is a powerful antioxidant (12). In this one respect gossypol is a desirable component.

Winterizability

Because a large percentage of the cottonseed oil production is winterized to make salad oil, the performance of any new cottonseed oils in this operation is important. Therefore the experimental oils were winterized by a procedure similar to that employed commercially. The temperature of each refined and bleached oil was lowered from 86°F. to 55°F. during an 8-hr. period and then held at 55°F. for 4 hrs. Subsequently the temperature was lowered successively to 52°, 49°, 46°, 44°, and 42°F. The holding time at each temperature was 12 hrs. The oil was filtered under gravity at 42 °F. during a period of 24 hrs. Yields and the cold tests on the winterized oils are recorded in Table I.

The oils from the low-gland and glandless seed behaved like ordinary, commercial cottonseed oils, indicating that the glyceride configurations and the proportions of the various glycerides were the same. Indirectly these findings are in agreement with the report by Mattson *et al.* (8) that practically all of the saturated acyl groups in the glycerides from the glandless seed are found in the 1- and 3-positions, which are the same positions in which they occur in the oil from gland-containing seed.

Acknowledgments

The authors wish to express their appreciation to J.H. Turner, U.S. Cotton Field Station, Shafter, Calif., for supplying samples of the seed; to A.J. Crovetto for assistance in the pressing operations; to V.O. Cirino and J.A. Harris for some of the chemical analyses; to R.T. O'Connor, E.R. McCall, R.A. Pittman, and Dorothy C. Heinzelman for the spectrophotometric measurements; and to H.D. Royce, Wesson Division, Hunt Foods and Industries Inc., New Orleans, La., for the gas chromatographic analyses.

REFERENCES

1. American Oil Chemists' Society, "Official and Tentative Methods," 2nd ed., rev. to 1959, V.C. Mehlenbacher, T.H. Hopper, and E.M. Sallee, eds., Chicago, 1959.
2. American Society for Testing Materials, ASTM Designation 97-57, Philadelphia, The Society.
3. Bailey, P.S., J. Org. Chem., *22*, 1548–1551 (1957).
4. Chahine, M.H., Cousins, E.R., and Feuge, R.O., J. Am. Oil Chemists' Soc., *35*, 396–401 (1958).
5. Emmerie, A. and Engel, C., Rec. trav. chim., *57*, 1351–1355 (1938).
6. Fulton, H.J., J. Agr. Research, *56*, 333–336 (1938).
7. Lewton, F.L., Smithsonian Inst. Publ. Misc. Collections, *60*, No. 6, 1–10 (1912).
8. Mattson, F.H., Martin, J.B., and Volpenhein, R.A., J. Am. Oil Chemists' Soc., *37*, 154 (1960).
9. McMichael, S.C., Agron. J., *51*, 630 (1959).
10. Parker, W.E., and McFarlane, W.D., Can. J. Research, *18B*, 405–409 (1940).
11. Pons, W.A. Jr., Kuck, J.C., and Frampton, V.L., J. Am. Oil Chemists' Soc., *37*, 671–673 (1960).
12. Royce, H.D., Oil & Soap, *10*, 123–125 (1933).

[Received November 21, 1960]

Report of the Uniform Methods Committee, 1960

THE MEETING of the Uniform Methods Committee was held at the Hotel New Yorker in New York on October 18, 1960. K.E. Holt, R.J. Houle, R.A. Marmor, L.D. Metcalf, Endre Sipos, E.M. Sallee, editor *ex-officio*, and Dan L. Henry were present. Visitors were Edward Handschumaker, T.H. Hopper, and Tom Parks.

The following matters were discussed and decisions made, as indicated.

1. **Report of the Seed and Meal Analysis Committee, M.H. Fowler, chairman**

   The Seed and Meal Analysis Committee recommended changes in the fuming equipment and the use of the Micro-Samplmill in Method AO 4-38. Their report was accepted by the Uniform Methods Committee. Some editorial changes were discussed pertaining to the treatment of the statistical data and the inclusion of a drawing of the Henry oven. The changes are recommended for adoption.

2. **Report of the Soap and Synthetic Detergent Analysis Committee (Joint with A.S.T.M.), J.C. Harris, chairman**

   Statistical data had been requested by the Uniform Methods Committee at the spring meeting. These data were presented in this report, and it is recommended that they be adopted and be included in the 1960 revisions.

3. **Report of the Spectroscopy Committee, R.T. O'Connor, chairman**

   The report on a method for the determination of Isolated *trans* Isomers was presented. This made use of the methyl ester derivatives of the fatty acids, and, although the method is satisfactory for use after the esters were obtained, full agreement had not been reached on their preparation.

   In line with the above report it is recommended that the spectroscopic method be adopted and that the preparation of the methyl esters be referred to another committee.

4. **Report of the Bleaching Methods Committee, T.C. Smith, chairman**

   This report shows that 3,000 cans of new natural bleaching earth are ready for canning and are then to be supplied for distribution. The Chemists' Committee, N.C.P.A., and the Technical Committee, N.S.P.A., have approved this earth. It is recommended that this earth be accepted as the official natural bleaching earth.

5. Report of the Color Committee, R.C. Stillman, chairman

The editorial changes in the method for the determination of Lovibond color of oils were accepted.

It is recommended that the revision be adopted and made ready for the 1960 edition of the methods.

A letter was read from Mrs. Lucy R. Hawkins, executive secretary, indicating a need for more complete information on special equipment or other supplies that are not normally available from chemical supply houses. Discussion led to the recommendation that, when such supplies are not available, sufficient information be incorporated in methods so that the user may obtain them even if he has to manufacture his own. Committee chairmen are to be asked to review their respective methods to make sure that the necessary descriptions of drawings for such supplies are given for the methods.

When ethyl alcohol is specified in the form of Formula 30 or 3A in the methods, it sometimes works a hardship on laboratories where the quantity used is very limited since government supervision has to be maintained on these items. It is requested that committee chairmen study their respective methods with the thought of substituting other materials where these are specified. Perhaps isopropyl or methyl alcohol could be given consideration.

It is recommended by the Uniform Methods Committee that a study of the existing Technical Committee set-up be made to diversify the load on committee chairmen where advisable. It is felt that some chairmen have responsibilities over and above the amount that could be expected of them. Their work is certainly appreciated, and it will be hard to find other means to get it done so well, but something must be done to relieve them. If one of these chairmen with a great load wishes to retire, it will be difficult to find a replacement. The Uniform Methods Committee recommends that a committee be set up for this study.

UNIFORM METHODS COMMITTEE

J.J. GANUCHEAU, K.E. HOLT, R.J. HOULE, R.A. MARMOR, L.D. METCALF, ENDRE SIPOS, E.M. SALLEE, editor *ex-officio*, R.L. TERRILL, D.L. HENRY, chairman

[Received February 1, 1961]

ABSTRACTS.... R. A. REINERS, Editor

ABSTRACTORS: S. S. Chang, Sini'tiro Kawamura, F. A. Kummerow, H. S. Liles, Louise R. Morrow, and E. G. Perkins

• Fats and Oils

A MANUFACTURING METHOD FOR IMPROVING THE PHYSICAL CHARACTERISTICS OF WINTER BUTTER. E.A. Zottola, G.H. Wilster, and R.W. Stein (Dept. of Food and Dairy Tech., Oregon State College, Corvallis). *J. Dairy Sci.* **44**, 41–46 (1961). Two methods of manufacturing butter were studied. One, the control procedure, consisted of cooling the cream after pasteurization to 46°F. The cream was held at that temperature overnight (15 hr.) and churned the next morning. The other method, the cream-temperature treatment or experimental method, consisted of cooling the cream after pasteurization to 46°F. and holding it at that temperature for 2 hr. Then it was heated slowly to 66°F. (heating time 1 hr.) with water in the jacket of the vat at 79°F. This temperature was maintained for 6 hr. The cream was then cooled to 61°F., held overnight (15 hr.), and churned next morning. Examination of the butter made by the two methods, when at a temperature of 48°F., showed that the cream-temperature treatment resulted in butter that was relatively soft and waxy and possessed smooth spreading properties. The butter made by the control procedure was generally hard, crumbly, and sticky and had poor spreading properties. Chilled wash water (40°F. or lower) and low-temperature storage (below 0°F.) were also found to be beneficial in the attainment and maintenance of desirable body characteristics in butter.

LIPIDS OF ANKISTRODESMUS BRAUNII. Virginia Williams and Rosamond McMillan (Dept. of Agri. Chem. and Biochem., Louisiana State Univ., Baton Rouge). *Science* 133, 459–60 (1961). *Ankistrodesmus braunii* was grown to stationary phase on a chemically defined medium and its cellular lipids were analyzed. The lipid content was found to vary from 18 to 73% of dry weight for cultures of different age and method of analysis. The pigments of the nonsaponifiable fraction were separated by adsorption chromatography and countercurrent extraction and tentatively identified. The fatty acid fraction was converted to the corresponding methyl esters and analyzed by gas chromatography. The principal fatty acids present were: palmitic, oleic, and linolenic acids. Traces were detected of caprylic, capric, lauric, and palmitoleic acids.

VOLATILE CARBONYL COMPOUNDS IN STORED DRY WHOLE MILK. O.W. Parks and S. Patton (Dept. of Dairy Science, The Penn. Agricultural Exper. Station, Univ. Park). *J. Dairy Sci.* **44**, 1–9 (1961). Flavor constituents in the low-temperature vacuum distillate of reconstituted dry whole milks were largely carbonyl in nature. The 2,4-dinitrophenylhydrazone derivatives identified by paper and column chromatography, ultraviolet studies, and melting points revealed qualitative differences in the milks studied. The relative amounts of individual carbonyls in four additional dry whole milks manufactured and stored under various conditions were determined. The results suggest that the complex problem of organoleptically characterizing stale and oxidized flavor deterioration in dry whole milk stems in part from the large numbers and variable quantitative relationships of the carbonyl compounds involved.

DETERMINATION OF CHOLESTEROL AND SQUALENE BY GAS CHROMATOGRAPHY. H.J. O'Neill (Armour Research Foundation of Ill. Inst. of Tech., Chicago, Ill.) and L.L. Gershbein (Dept. of Biology, Ill. Instit. of Tech., Chicago, Ill.). *Anal. Chem.* 33, 182–85 (1961). Procedures are advanced for the determination of cholesterol and squalene in various biological mixtures; notably, scalp sebum. The cholesterol determination can be performed either on the unsaponifiable fraction of sebum or on a sterol-enriched fraction (10 to 20% cholesterol) obtained by a liquid phase chromatograph of the unsaponifiable material. The squalene content can be analyzed directly in the original sebum or on the unsaponifiable fraction. The total time required for the analysis of both components is approximately 10 minutes and covers the range of 2 to 24% with an accuracy of ± 0.7%. The procedures have also been applied to ovarian dermoid cysts, placental lipides, basking shark liver oil, tall oil, and synthetic mixtures containing perhydrosqualene ($C_{30}H_{62}$), among others.

COMPARISON OF ACID AND NONACID VOLUMETRIC METHODS FOR DETERMINING THE PERCENTAGE OF BUTTERFAT IN RAW MILK. W.T. O'Dell (Dept. of Dairy Science, Penn. Agric. Exp. Station, University Park). *J. Dairy Sci.* **44**, 47–57 (1961). Raw milk of varied fat content was comparatively analyzed by the Gerber, Dairy Products Section (DPS) TeSa, Schain, Babcock, and Mojonnier procedures. The Babcock, Gerber, and