

Report of the Standards Committee, 1964

The Standards Committee convened at the Spring Meeting of the Society in New Orleans. This report summarizes the activities of the respective subcommittees on Nomenclature, Statistics, Specifications, Tables and, where appropriate, the actual progress report of the subcommittee is presented.

Nomenclature

The Subcommittee on Nomenclature, under G. E. Goheen, will be guided by the following objectives:

- 1) To define nomenclature as related to the chemistry of fats and oils.
- 2) To study existing systems of nomenclature applicable to the chemistry of fats and oils and related substances and to recommend an acceptable system of nomenclature.
- 3) To make recommendations to the Editorial Board of the Journal of the American Oil Chemists' Society regarding nomenclature policy to be followed by authors who publish in the Journal.

Objectives 1 and 2 were accomplished and reported in September 1963. Plans were outlined to study and name the following classes of compounds of interest in fat and oil chemistry: acyclic hydrocarbons, acids, alcohols and esters. Of these classes, the carboxylic acids were considered most important, so that initial work was concentrated in this area and a draft of the section on "The Nomenclature of Carboxylic Acids," has been prepared. Studies are in progress on glycerides and other esters and will later include fatty nitrogen derivatives. The subcommittee tentatively plans to publish a uniform nomenclature in the fall of 1965 after approval by the Uniform Methods Committee and the Editorial Board.

Statistics

The Statistical Subcommittee, under H. P. Andrews, has formulated the following objectives:

- 1) Consult in the design of committee studies and conduct analysis and interpretation of data from these studies.
- 2) Assure statistical validity of the actions of the governing committees.
- 3) Institute and promote education in statistical methodology beneficial to the industry.
- 4) Investigate the contribution which statistical review might make to the quality of papers submitted to the JAOCS.

The committee already has made considerable progress in its education program through the sponsorship of short courses designed to facilitate the use of statistical techniques. A special three-day course in the evaluation and interpretation of testing methods will be offered June 25-27 in Chicago. It is hoped that cosponsorship of such courses by the AOCS subcommittee with the Chemical Division of ASQC will create a favorable image and financial position which will in turn sustain other activities of the committee.

In order to accomplish the second objective, it is desirable that the chairman of the committee actively participate in decisions of the governing committees concerning methods and data. As a member of the Uniform Methods Committee he could do this. It is also becoming increasingly clear that the chairman must be supported financially to permit him to attend these meetings. Financial success with the third objective will help to make this decision less difficult for the governing board.

Dr. Andrews proposes to recruit a group of statisticians, as many as 15-20 competent members, which will constitute his committee and which will be available, by appointment, to help the working committees with counsel and service. These statisticians would insure the validity of the methods, by checking experimental design and by study of the data evolved. Another function which this group would perform

would be to review all papers submitted to the JAOCS in which quantitative data are used to support conclusions. This would be carried out through proper arrangements with the JAOCS editor or through the Editorial Board.

The Statistical Subcommittee will review AOCS Method M-1-59 adding an introductory paragraph to explain when the nested design should be used. This design was intended to be comprehensive and to yield the maximum information, but in many instances it results in superfluous data, and mandatory use of the design discourages product committee work. The committee will also introduce the use of the coefficient of variation to accommodate values of low magnitude. These low numbers when treated in the manner prescribed in M-1-59, give precision values which are not attractive and do not reflect the precision possible in the method.

Specifications

The Subcommittee on Specifications, under R. Buswell, has reviewed the specifications on thermometers, Section H of the methods book, and has presented a consolidated system to the Uniform Methods Committee for approval.

A study of specifications in current AOCS methods has revealed a chaotic condition. The report of the committee illustrates this clearly.

"Currently (Feb. 1964) the AOCS Methods include specifications for five solvents, but the procedures contain 226 applications for some 25 solvents. Table I lists the solvents in order of decreasing use along with the various specifications associated with each of them. The most frequently utilized specifications and the number of uses are as follows: ACS (63), AOCS (40), USSD Formulas 30 & 3A (34), USP (17), Reagent Grade (10), Analytical Reagent (9) and Chemically Pure (4).

"Because one of the analyst's first problems is to obtain the specified chemicals for a test, the availability of solvents meeting AOCS specifications was investigated by a search of catalogs and a questioning of manufacturers. The Phillips Petroleum Co., Bartlesville, Okla., and the Mallinckrodt Chemical Works, St. Louis, Mo., offer petroleum ether H 241. The Skelly Oil Co., Kansas City, Mo., is a source for both petroleum ether H 2-41 and commercial hexane H 16-56. The remainder of the search was entirely negative. AOCS grade petroleum solvents are not sold by American Mineral Spirits Div. of the Pure Oil Co., Sinclair Refining Co., Shell Oil Co., Standard Oil Div. of American Oil Co. or Mobil Oil Co. No references to the five solvent specifications were found in the following catalogs: Eastman Organic Chemicals No. 43, Baker & Adamson No. 60, Fisher Chemical Index No. 64-C, Matheson, Coleman & Bell (1963), A. H. Thomas & Co. No. 61 and Sargent No. 109. Queries to Merck & Co. and to Mallinckrodt Chemical Works drew negative answers.

"The most frequently (90) used solvents, ethyl alcohol and petroleum ether, are available and clearly defined by their respective specifications. The 12 applications of AOCS grade isopropyl alcohol, methyl alcohol and toluene are difficult if not impossible to achieve; I could not find a source for any of them. Specifications for the remaining 124 uses (26-90-12=124) are obtained from other sources (ACS & USP) or from such manufacturer's standards as 'Analytical Reagent,' 'Reagent Grade' and 'Chemically Pure.'

"Adoption of the American Chemical Society specifications should be considered because 1) the standards are the highest available competitively, 2) they are revised every five years, 3) they are quoted by nearly every supplier, 4) they are used 63 times in the current methods book, and 5) they are used in the AOAC Methods of Analysis 9 Ed. (1960). There would have to be some exceptions; the formulas for denatured alcohol are out of our hands and seven of the little used solvents have not been covered by the AOAC (see Table I). Although the Phillips Petroleum Co. product, H 2-41, also meets ACS specifications, there may be some hesitation in adopting the latter designation because

(Continued on page 23)

(Continued from page 18)

of the uniform use of H 2-41 in the methods and because it is recognized and supplied by two petroleum companies. The very precise specifications on pyridine for use in the Karl Fischer water determinations (Ca 2c-55 and Ea 8-58) raises the question of suitability of ACS solvents in special cases. A double check on this possibility might be obtained by circulating proposed changes to all technical committee chairmen and also by a 'Posting of the Banns' in the Journal. Because of the exact reasons for choosing the present specifications are somewhat obscure, a wide circulation of proposed changes would offer some protection against error.

"If a need arises, the alphabetized list of solvents with method numbers and associated specifications (226 items) can be made available."

Tables

The report of the Subcommittee on Tables, under M. Lauro follows:

"No data on the fatty oils have been found of sufficient import to warrant any changes in the present revised Section I of the Book of Methods.

"However, in gathering data for future inclusion on a modified system of classification either as part of the tables of 'characteristics' or as a separate tabulation, this committee submits the following as an indication of the type of work it is pursuing for the above mentioned purpose.

"Classification of fatty oils on a utilitarian basis, according to dominant and characterizing constituents follow:

LAURIC ACID GROUPING

	Babussu	Cocoa	Cohune	Ouric.	Palm.	Tucum	Uchuh.
Lauric	45-47	44-48	46	46	52	49	14.8
Myristic	14.5-17	17-18	16	9	15	21.6	65-90
Palmitic	7-9	9-11	9.5	7.7	7.5	6.4	4.9
Oleic	12-13	6-7	10	13.1	16	13.2	7.3

ERICIC ACID GROUPING

	Rapeseed	Mustard, Wild	Mustard, White	Mustard, Black	Ravison
Erucic	40-55	18	41.5-44.5	40.6	38.7
Oleic	12-19	28	22-32	20.7	15.5
Linoleic	12-16	35	14-18	18.0	20.9
Linolenic	7-9	8	3-7	6.5	9.9

OLEIC ACID GROUPING

	Olive	Palm	Peanut	Teaseed
Oleic	64-83	38-43	60-61	83-83.3
Linoleic	7-16	9-9.5	21-22	7-7.4
Palmitic	6-14	43-48	6-7	7.6-8
Stearic	2.4	4	5	0.8-1.0

LINOLEIC ACID GROUPING

	Corn	Cotton	Kapok	Poppy-seed	Safflower	Sesame	Soya	Sunflower
Linoleic	42.3	49.7	33.6	62	67.3	38-43	52.6	58.6
Oleic	46	24.7	45.9	30.3	26.4	40-49	28	34
Palmitic	7.4	22.9	10.2	4.8	4.0	7.8-10	6.5	3.5
Stearic	3.5	2.2	8.5	2.9	1.5	4.7-5	4.2	2.9

LINOLENIC ACID GROUPING

	Linseed	Perilla
Linolenic	50.6-52	46.5
Linoleic	16-17.4	38
Oleic	21-22	8-13
Palmitic	6-6.4	7-7.5
Stearic	4-4.5	2

CONJUGATED ACID GROUPING

	Castor	Oiticica	Tung
Eleostearic			77-82
Licanic		74-82	
Ricinoleic	80-95		
Oleic	0-8.2	4.5-6.5	4-15
Linoleic	3-5	10	4-8.5
Palmitic	2	5-7	4
Stearic	3-1	5	1.5

ANIMAL FATS

	Lard	Tallow, Beef	Tallow, Mutton	Neatsfoot
Palmitic	24-26	26-35	21-25	16.9-18
Stearic	11-18	15.5-17	30	2.7-3
Oleic	42-49	43-44.5	31-43	67.4-79
Linoleic	9-12	2.2-4	4-5	

"The above values are mainly from chromatographic analysis. The chairman solicits the comments and assistance of those concerned with this type of data."

G. E. GOHEEN, Subcommittee Chairman
H. P. ANDREWS, Subcommittee Chairman
R. J. BUSWELL, Subcommittee Chairman
M. F. LAURO, Subcommittee Chairman
W. E. LINK, Chairman

• New Products

GUILD CORPORATION, Bethel Park, Pa., announces a simple instrument for checking laboratory millivolt recorders. It supplies an independent, controlled low level DC signal to the recorder, which can be varied from zero to 10 mv.

PHILLIPS ELECTRONIC INSTRUMENTS, Mount Vernon, N.Y., announces their Norelco PW 1212 Automatic Spectrometer, excelling their previous designs in sensitivity, accuracy and speed; it is capable of detecting fluorine and utilizes a sealed-off X-ray tube.

CONSOLIDATED VACUUM CORP., Rochester, N.Y., has developed a full line of 10 diffusion pumps with a higher-than-ever throughput, quicker heatup, faster pumpdown and sharply reduced backstreaming. Designated PMC BLUE-LINE, the new line ranges from the 2-in. model to the giant 48-in. version, which has an air speed of 95,000 liters/sec.

(Continued on page 34)

New Life

for your

CHROMATOGRAPH

- at a modest cost!

There are two ways of revitalizing your older chromatographs equipped with antiquated, less responsive electrometers. One, is to modernize and upgrade your existing electrometers, which we will do for a nominal cost—or, install the latest in electrometer circuitry as available in the Gyra Model E-307.



The E-307 has improved response, a refined zero adjustment and greatest overall stability. Input surges that would seriously damage older instruments are isolated and by-passed, insuring maximum reliability. Carrier gas conduction currents, a frequent cause of error in chromatography, are balanced out.

Let us give your Chromatograph New Life—
recommendations and quotes—no obligation.

Gyra ELECTRONICS CORPORATION

Phone: Area 312 354-4644.

P. O. Box 184-W-1

LaGrange, Illinois 60526