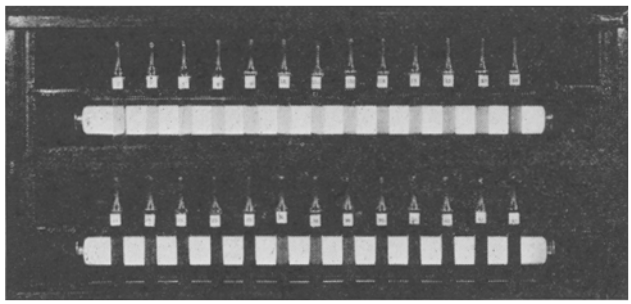
The Facolorimeter

A Device for Use With the F.A.C. Standard Color Ampoules

LAURENCE K. WHYTE
Colgate-Palmolive-Peet Company, Kansas City, Kansas

In the laboratory grading of fats involving the F. A. C. system utilizing a series of standard color ampoules, two salient shortcomings became evident to us with respect to their employment. Firstly, the undesirably inconvenient and somewhat hazardous operation of continually handling the standard ampoules; secondly, the distinct need for a constantly available source of adequate illumination of the proper type.



With these major observations in mind, we developed a simple device, tentatively designated a "Facolorimeter" — this appellation being derived from the combination of the initials F. A. C. and the word colorimeter, which surmounts the shortcomings previously mentioned. The assembly itself consists of a rectangular cabinet providing a permanent housing for the standard color ampoules, these being located immediately behind a protective clear glass panel at the front of the instrument. The standard ampoules are arranged in two tiers of thirteen each in sequence as below:

Upper row: 1, 3, 5, 7, 9, 11, 11A, 11B, 11C, 13, 15, 17, 19;

Lower row: 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45.

The spacing of the standard ampoules is such as to permit the holding of the sample tube of oil to be graded in front of the clear glass panel and correspondingly between the various standards when ascertaining its color. It will be evident that this testing procedure embodies rapid and efficient manipulation. The problem of lighting was solved by the employment of daylight fluorescent tubes, the visible energy output of which is characterized by a spectral quality approximating that of June daylight, a desirable feature. The fluorescent tubes not only furnish a source of adequate and proper illumination, but are inherently adaptable to the linear arrangement of the F. A. C. color standards in the cabinet. Specifically, one fluorescent lamp (daylight—T8, 15 watts) is installed about 1¾ inches behind each row of standard color ampoules. When in operation, a band of light is produced across each standard ampoule and the sample tube being viewed, rendering ascertainment of the color grade remarkably facile.

The interior of the cabinet, including the fluorescent assembly, is finished in black; the top is removable, ensuring accessibility for replacement purposes; the front of the instrument is equipped with a hinged cover which protects the standard color ampoules from actinic rays when not in use. An additional convenience is realized by mounting the assembly on a wall of the laboratory at a height corresponding to the eye-level of a technician of average size.

We have had one of these instruments in use in our laboratory for some time and are extremely satisfied with the benefits accruing therefrom.

Report of the Committee On Analysis of Commercial Fats and Oils—1940-41

Progress has been made on several methods during the past year, however, only one of these is ready for a final report. The work under way has included the following:

Moistures
Unsaponifiable Matter
F. A. C. Color Standards
Iodine Numbers
Thiocyanogen Values
Titer Thermometer Specifications

The Committee has collaborated with the American Society of Testing Materials, Committee E-1, in an effort to standardize specifications for the titer test thermometer so that one instrument might be satisfactory to all. We have arrived at an agreement and submit herewith the revised specifications which we recommend for adoption:

Specification for F. A. C. Titer Test Thermometer

Type: Etched stem, glass.
Liquid: Mercury.
Range and subdivision. —2 to 68° C in 0.2°.
Total length: 385 to 390 mm.
Stem shall be constructed of suitable thermometer tubing of either plain or lens front type.
Diameter—plain front type: 6 to 7 mm.
Thickness of stem—lens front type: the cross section of the stem shall be such that it will pass through an 8 mm. ring gauge but will not enter a 5 mm slot gauge.
Bulb: Corning normal or equally suitable thermometric glass.
Length: 15 to 25 mm.
Diameter: 5.5 mm to not greater than that of stem.
Distance from bottom of bulb to —2° mark: 50 to 60 mm.
Distance to 68° mark from top of thermometer: 20 to 35 mm.
Length of unchanged capillary between the highest graduation, and the expansion chamber: 10 mm.
Expansion Chamber: To permit heating to at least 85° C. Space above mercury to be evacuated or filled with nitrogen or other suitable gas.

Top finish: glass ring.

Graduation: All lines, figures and letters to be clear-cut and distinct. Each degree mark to be longer than the remaining lines. Graduations to be numbered at zero and at each multiple of 2 degrees.

Immersion: 45 mm.

Marking: "FAC Titer Test," a serial number and the manufacturer's name or trade mark shall be etched on the stem. The words "45 mm. immersion" shall also be etched on the stem, and a line shall be etched around the stem 45 mm above the bottom of the bulb.

Scale error: The error at any point on the scale shall not exceed 0.2° C.

Standardization: The thermometer shall be standardized at the ice point and at intervals of approximately 20°, for the condition of 45 mm immersion, and for an average stem temperature of the emergent mercury column of 25° C.

Case: The thermometer shall be supplied in a suitable case on which shall appear the markings "FAC Titer Test," "—2° to 68° C in 0.2°."

Note: For the purpose of interpreting these specifications, the following definitions apply:

The total length is the over-all length of the finished instrument.

The diameter is that measured with a ring gauge or micrometer.

The length of the bulb is the distance from the bottom of the bulb to the beginning of the enamel backing.

The top of the thermometer is the top of the finished instrument.

L. B. PARSONS	W. J. REESE
W. D. HUTCHINS	M. L. SHEELY
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C. P. LONG	H. P. TREVITHICK
K. S. MARKLEY	M. L. LAING
H. A. SCHUETTE	F. C. WOEKEL
J. E. MARONEY	S. O. SORENSEN

V. C. MEHLENBACHER, *Chairman*

Book Review

MICROBIOLOGY OF MEATS. By L. B. Jensen. The Garrard Press, Champaign, Illinois. 1942. 252 pp. Price $4.

The book treats the microbiological aspects of the flesh food industry as gained by a bacteriologist from industrial practice and research, and a review of the literature on the subject. For this reason and because of the specific nature of the title one might assume it to be a handbook for bacteriologists in the meat industry. However, the book deals with the technical, chemical, and bacteriological sciences as applied to processing and preservation of meats and fats derived therefrom.

Chapter five on the action of microörganisms on fats is an excellent review on the subject. Since chemists have been the main developers of theories on rancidity and have emphasized principally the chemical and physical agencies with very little attention to the effect of enzymes and bacteria on fats, this new book should stimulate a broader concept of the various phenomena that occur during fat spoilage. The author was the first to demonstrate a bacteriological mechanism which induces oxidative rancidity.

Although only one chapter in the book is devoted to the action of microörganisms on fats, the subject of bacterial discoloration and spoilage of fats is treated indirectly in most of the chapters devoted to flesh foods. The methods for handling "cutting" and "killing" fats and oils in a practical, sanitary manner to avoid rancidity and discoloration are discussed in detail.

M. M. PISKUR.

CORRECTION

Review of Literature on Fats, Oils, and Soap, 1941, part I, page 46—*U. S. 2,229,378* should read *U. S. 2,229,376*. Page 47—*U. S. 2,224,043* should read *2,244,034*.

Abstracts

Oils and Fats

Edited by
M. M. PISKUR and SARAH HICKS

A SEASHORE FAT FROM PIAUI. Camilla Rolin. *Rev. quim. ind. 11*, No. 118, 13-5 (1942). A hard waxy fat which is found in lumps at a depth of a few cms. along the shore near Parnaiba in Piaui, Brazil, is apparently derived from algae or from some low form of plant life. It is brown in color and has a strong penetrating odor. It is insol. in H_2O but sol. in the usual fat solvents; its density is 0.95. For a fat its m.p. is high (58-61°) but chemically it is a fat, not a wax, and it has a high free fatty acid content. This crude fat contains about 0.28% moisture, 0.8% ash, 0.14% S and 0.07% N. It has no drying properties; its I no. is only about 30. Industrially, the fat could be utilized in soap manuf. since it contains only about 0.5% unsaponifiable matter. It should be noted, however, that its soap is hard and only sparingly sol. in H_2O. Its possibilities for use in other ways depend on its compn.; analysis indicates that it is particularly rich in palmitic and myristic acids. *(Chem. Abs.)*

THE NATURE OF THE FATTY ACIDS ASSOCIATED WITH STARCH. THE ADSORPTION OF PALMITIC ACID BY POTATO AND DEFATTED CORN AND RICE STARCHES. Leo Lehrman. *J. Am. Chem. Soc. 64*, 2144-8 (1942). Potato and defatted corn and rice starches take up palmitic acid from a methanol soln., probably by adsorption. A discussion of known facts leads to the conclusion that fatty acids assoc. with starch are probably adsorbed.

THE APPROXIMATE COMPUTATION OF MIXED GLYCERIDES PRESENT IN NATURAL FATS FROM THE PROPORTIONS OF THEIR COMPONENT FATTY ACIDS. T. P. Hilditch and M. L. Meara. *J. Soc. Chem. Industry 61*, 117-25