able to control brightness. It must necessarily be remembered that color gradings of oil samples are not merely of scientific interest but that these color gradings are made for the purpose of commercial evaluation. Radical changes in the principles involved in color determinations might affect the basic trading rules of the National Cottonseed Products Association. Dr. Freyer has suggested that the brightness should be controlled and measured quantitatively; a feature which was not in the original experimental model. If it can be shown that such a feature is practical and would not cause confusion in commercial practice it might be desirable. More work is necessary along this line.

Dr. Brown, in a recent letter to the committee, reminded us that no instrument for matching colors could overcome inherent defects in the vision of the observer. Some years ago when Mr. Harry P. Trevithick was President of the Society he arranged for tests, by a representative of the Bureau of Standards, of members, particularly Referee Chemists, for color blindness. It is too late to undertake such a test at the coming meeting of the Society, but we recommend that the Governing Board give consideration to the advisability of providing such tests at the 1944 Spring meeting.

During the past few months the Special Subcommittee of the Finished Materials Standards Committee and Trading Rules Oil Committee of the National Soybean Processors Association, of which Mr. Lamar Kishlar is Chairman, has developed a new method for color grading of green soybean oils. Our committee has considered the desirability of work on this method, but, upon the advice of Mr. Kishlar, has decided not to take action at this time. We suggest that this be referred to the incoming committee for 1943-44 with the further suggestion that co-operative work with Mr. Kishlar's committee be carried on if he thinks it desirable.

The committee recommends that the following change be made in the A.O.C.S. Methods on page 16F, under "Refined Oils—Color"—subparagraph "Lovibond Color Glasses"—and after the paragraph which reads: "Laboratories analyzing corn and soybean oils shall have 50 and 70 yellow glasses in addition to the above," add the following paragraph:

> "The color glasses should be kept clean and free from oil film. They should be handled carefully and protected against acquiring scratches. It is especially important that every color glass used shall be clean at the time of its use."

G. WORTHEN AGEE, *Chairman* — DR. E. B. FREYER
MRS. GERALDINE W. HAUPT — N. C. HAMNER
R. E. BASS — E. O. SEABOLD
M. G. BOULWARE — R. C. STILLMAN
DR. MORDEN BROWN — HARRY P. TREVITHICK

Report of the A.O.C.S. Oil Characteristics Committee — 1942-1943

The following oils have been passed upon by this Committee: Palm and Palm Kernel, Coconut and Sunflower Seed Oils.

It is again urged that members of the Society and those engaged in the trade consider this list and note any exceptions to the specified data, calling attention to the chairman of such and any new matter.

A. O. C. S. RECOMMENDED STANDARD FOR PALM KERNEL OIL

(From the kernel or nut of the fruit Elaeis guineensis.)

Spec. Grav. @ 99/15.5°C.	0.860 to 0.873
nD @ 40°C.	1.449 to 1.452
Iodine Value	14 to 22
Sap. Value	245 to 255
Unsaponifiable	Maximum 0.8%
Melting Point	24 to 26
Setting Point	20 to 26

The setting point may be used in lieu of the titre and is a very convenient method of testing for hardness (solidifying point). It is performed on the filtered oil in the same manner as the titre, having a low point before rising as in the titre to a maximum recorded temperature.

A. O. C. S. RECOMMENDED STANDARD FOR SUNFLOWER SEED OIL

Spec. Gr @ 25/25°C.	0.915 to 0.919
nD @ 25°C.	1.472 to 1.474
Iodine Value	125-136
Saponification Value	188-194
Unsaponifiable	Max. 1.5%
Titre	16-20

A. O. C. S. RECOMMENDED STANDARD FOR COCONUT OIL

Spec. Gr. @ 99/15.5°C.	0.869-0.874
@ 25°C.	0.917-0.919
nD @ 40°C.	1.448-1.450
Iod. Value*	7.5-10.5
Sap. Value*	250-264
Unsaponifiable	Max. 0.5%
Titre	20 to 24
Setting Point	21.8 to 23
Reichert-Meissl No.	6-8
Polenske No.	15-18

A. O. C. S. RECOMMENDED STANDARD FOR PALM OIL

(African and Sumatran*)—from the outer pulp or fleshy part of the fruit of Elaeis guineensis.

Spec. Gr. @ 100°F. (37.8°C.)	0.898 to 0.901
nD @ 40°C.	1.453 to 1.456
Iodine Value	44 to 58
Saponification Value	195 to 205
Unsaponifiable	Max. 0.8%
Titre	40 to 47

Color of the crude oil—Orange yellow to dark red.

Classification: Hard and soft oils, according to acidity; the higher the acid content, the harder the oil.

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* As sometimes happens, oils from parings or rind of the kernel is added to "whole" coconut oil; the iodine value is thereby considerably raised and is usually 11-14, the sap. value lowered and is usually 248-254.

* The South American oil palms are either a different variety (Elaeis melanococca) or African imported. In any case both pulp and kernel oils show distinct differences and are not included in the above analytical list.

Grades: According to country of origin and method of preparation for the market—color, acidity and impurities—the better grades of good bright color, low in acidity and relatively free from dirt and other insoluble impurities: Lagos and Red Sherbro (among the best), Bonny Old Clabar, Opobo are soft oils. Harder Oils: Congo, Niger, Old River, Gold Coast, and Liberia (poorest grade).

A Test for Color Readers

PROCTER THOMSON
Procter & Gamble Co., Ivorydale, Ohio

To secure concordant results between laboratories reading colors, the following three factors must be standard:

The background
The illumination
The observer

There has been some discussion as to the amount of abnormality which a color reader can possess and still read Lovibond colors in an acceptable fashion. This question is far from settled.

The writer thought it would be interesting to determine the variation in color vision among the members of the American Oil Chemists' Society in attendance at the New Orleans meeting. Accordingly, there were prepared a number of Kodachrome slides of various color blindness tests. The plates in the tests consist of numbers outlined in dots of one color against a background of other colors. The slides are not exact reproductions of the original plates. Although three sets of color photographs were taken and the best selected, the slides were not quite equal to the original plates.

The members were grouped within 40 feet of the screen (to minimize the effect of distance) and shown the slides, about ten seconds being allowed for viewing. After a suitable interval for recording the impression, the next slide was shown, and so on. Eighty-two members turned in test cards filled out. The results were as follows:

Slide Designation	Correct Figure	Number of Correct Answers	Penalty for Incorrect Answers
A	8	79	16
B	5	80	16
C	6	75	14
D	7	65	13
E	42	82	16
F	052	1	.2
G	86	46	9
H	56	79	16

The penalty values were set up to be proportional to the ease of answering (number answering correctly) and to yield approximately a zero grade if all were missed. There was only one card with the correct value for F, but the member who filled it out only graded 77 on the whole test, so there is an inference that he put the number on the card for his own information after the correct value was announced.

The grades group as follows:

99.8%—40 members	76.8%—2 members
90.8%—19 members	74.8%—3 members
86.8%— 6 members	73.8%—1 member
77.8%— 6 members	63.8%—3 members
77. %— 1 member	61.8%—1 member

It is evident that the color acuity of the members varies over a fairly wide range.

Abstracts

Oils and Fats

Edited by
M. M. PISKUR and SARAH HICKS

ANALYSIS OF A SPOTTED COW SHARK LIVER. Prog. Repts. Pacific Coast Stas. No. 55, 9 (1943). Iodine number of liver oil—97.8, unsaponifiable matter in liver oil—12.2%.

THE DETERMINATION OF FREE AND BOUND FAT IN FOOD, ESPECIALLY IN DRIED EGG YOLK. J. Grossfeld. *Z. Untersuch. Lebensm, 83,* 322-34 (1942). Foods contain both free and "bound" fats. Difficultly extractable bound fats are retained in the samples mechanically, colloidally, or chemically. To ext. the total fat from egg yolks hydrolysis with HCl is necessary. The Grossfeld method is recommended for total fat. This has been modified by the addn. of 10 cc. CCl_4 before acid hydrolysis, 40 cc. of benzine solvent are used and the fat is detd. on a 25 cc. aliquot. Total fat could also be separated after hydrolysis, by extn. with a 1:1 alc.: C_6H_6 mixt. in an extn. app. After detn. of P_2O_5 in the ext., corrections are made for the lecithin extd.

CHARACTERISTICS OF GOAT MILK FAT. A. Zeisset and J. Grossfeld. *Z. Untersuch. Lebensm. 83,* 385-99 (1942). Analysis of 169 goat butter samples obtained in different parts of Germany showed: n^{40} (Butyro) 40-42.2 (av. 41.3), total no. of low mol. wt. fat acids 34.5-45.5 (40.1), butyric acid no. 12.2-16.2 (14.1) and residue no. 21.2-31.3 (26). There was no significant differences in samples from different breeds. There was a weak negative correlation ($r = -0.46 \pm 0.05$) between n and residue no.; and a weaker neg. relationship ($r = -0.30 \pm 0.07$) between n and butyric acid no. When the av. residue and butyric acid nos. are used in the equation that