

TABLE VI
Residual Color Obtained by Different Bleaching Processes on Neutralized SPB Palm Oil
(FFA of the crude oil: 2.1%)

Bleaching conditions	Heat bleaching			Earth bleaching		Combined treatment	Pre-earth treatment		Post-earth treatment	
	1	2	3	4	5		7	8	9	10
Temperature.....	240C	220C	210C	105C	100C	150C	105C	100C		
Bleaching time.....	60 min.	60 min.	60 min.	45 min.	45 min.	45 min.	20 min.	20 min.		
% Bleaching earth.....				45%	5%	2%	2.5%	2.5%		
FFA content.....	.13%	.13%	.13%	.12%	.22%	.21%	.11%	.09%		
Optical density at 420 mμ.....	.38	.78	.35	2.5	6.15	3.0	4.1	17.4	cf 2	cf 3
Lovibond 5 ¼ in.....	3R, 30Y	1R, 49Y, 4 Blue	5.5R, 49Y	4R, 49Y	6R, 49Y	3R, 49Y	8R, 49Y			
Temperature.....							210C	220C	100C	100C
Bleaching time.....							60 min.	60 min.	20 min.	20 min.
% Bleaching earth.....									5%	5%
FFA content.....							.11	.10	.10	.10
Optical density at 420 mμ.....							.70	.50	.50	3.0
Lovibond 5 ¼ in.....							2.2R, 45Y	1R, 30Y	5R, 22Y	3R, 49Y
Residual color in Lovibond 5 ¼ in.....	3R, 30Y	1R, 49Y, 4 Blue	5.5R, 49Y	4R, 49Y	6R, 49Y	3R, 49Y	2.2R, 45R	1R, 30Y	5R, 22Y	3R, 49Y

selenium catalyzer and recrystallized until pure.) (Purity was checked by the melting point.)

The palm oil heated to 300C as well as to 250C in presence of bleaching earth acidified partly during heating. The interfering acid peak at 976 cm⁻¹ was eliminated from the I.R. spectrum by methylating these samples with diazomethane.

Table V shows that acid activated bleaching earth catalyzes also strongly the trans-isomerization.

In practice the trans-isomerization is reduced to negligible amounts by decreasing the time/temperature relationship.

Bleaching in practice. A variety of tests were performed in order to determine the best practical bleaching conditions, to avoid any structural modification of the palm oil. The aim was to check the application of especially mild conditions for bleaching of palm oil to be used in margarine manufacture.

Residual color: Successful bleaching under mild conditions can only be achieved with good quality oils (such as SPB palm oils). These oils, which have been produced in the Congo as a result of the present investigations, have a low FFA content (below 2%) and possess good bleachability. Oils of more average quality give rise to brown and greenish off-colors which need a more intensive treatment; bad quality oils cannot be bleached properly at all.

The tests summarized in Table VI illustrate clearly the temperature effect in both the heat treatment and the earth treatment. They show that heat treatment at only 220 or even 210C, preceded or followed by earth treatment with a small amount of bleaching earth at 100 or 105C gives quite satisfactory results. The important difference between the bleaching earth effect at 100 and 105C is perhaps due to the interference of water on the adsorption of the pigments.

The "combined treatment" leads also to reasonable residual colors. It should be borne in mind that increasing of the temperature in presence of acid-activated bleaching earth favors the polymerization and trans-isomerization of the oil. Under present experimental conditions though, these effects are negligible.

Heat bleaching has to be carried out in stainless steel apparatus, whereas earth bleaching and the "combined treatment" can be performed in ordinary steel.

Keepability: SPB palm oil is fairly stable. Naturally occurring tocopherol acts as an anti-oxidant. Other factors which influence the keepability of the refined oil are: (a) The quality of the crude oil. In SPB palm oils, for instance, care is taken to avoid oxidation and heavy metal contamination in view to improve the bleachability. (b) The refining conditions. Bleaching operations are controlled to give an oil with low amounts of pro-oxidant elements and at the same time retain as much as possible the natural anti-oxidants.

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• *Local Section News*

Southwest Section

The Southwest Section held its last meeting of the current season with the traditional Ladies Night. The program consisted of two sound, color films: "Essential Oils of Africa," by Ernest Guenther of Fritzsche Bros., Inc.; and the second on the perfume industry in France. Ben Kapp, of Process Chemicals Company, gave a short talk on the "Psychology of Perfumes." Appropriately enough to this type of program, samples of perfume were distributed to all members and guests.

The following officers were elected, May 9, for the 1963-64 term: R. W. Atwood, Chairman; C. P. McClain, Vice Chairman; F. C. Woelke, Secretary; W. J. Park, Treasurer; and J. B. Michaelson, Program Chairman.

Tentative schedule of meetings for the coming year are: September 12, November 14, January 9, 1963, March 12, and May 14.

North Central Section

On Wednesday, May 1, the North Central Section closed their scheduled meetings with a Ladies Night Dinner Meeting at the Builder's Club in Chicago. Featured speaker was C. W. Powe, Jr., Whirlpool Corporation, with an intriguing title, "Out, Damned Spot?" Mr. Powe is experienced in the testing of laundry detergents and processes and in talking about them; he has also authored a number of technical papers on the subject. He compared the different methods of measuring how clean your clothes are . . . affording a better understanding of advertising claims of the soap commercials.

New officers (listed in the April Journal) were installed for the coming year.