



Fig. 5. Bleached color vs. adsorbent dosage at 220°F. on Choice and Prime Tallow—vacuum vs. atmospheric bleaching.

perature of the tallow was raised to approximately 220°F., and agitation and recirculation were also applied. When the tallow was dry, the adsorbent was added and bleaching was continued until the desired color was obtained on a sample of fat filtered from the fat adsorbent slurry in the laboratory. Following this, the fat adsorbent slurry was pumped through a plate and frame filter press in the plant, recirculated back to the bleach tank for several minutes to attain clarity of filtrate, and finally pumped to finished storage. The finished bleached color reported was that of the well mixed fat in the storage tank. In the laboratory tests the same adsorbent and adsorbent dosage were used as in the plant, and the decolorizing temperature approximated that employed in the plant. Other than this, conditions were those of the standard laboratory method.

Comparative bleached colors with operating condi-

tions, plant vs. laboratory, are presented in Table I. It will be noted that the plant-bleached color in each of the six runs was lower than that of the laboratory. However, based upon the writers' experience, in five of the six runs, the ratio of adsorbent in the plant to that in the laboratory required to bleach to the plant color was somewhat higher than is usually obtained. No doubt this can be explained by the extended time of drying in the plant, during which the fat was exposed to atmospheric oxygen at an elevated temperature.

The poorer laboratory bleach than that of the plant probably results from the following causes: a) greater exposure of the fat to oxidation in the laboratory test, resulting from a smaller volume and more violent agitation; and b) a thinner cake thickness during laboratory filtration. The adsorptive capacity of the adsorbent is not exhausted in the bleach tank, and the filter cake imparts a substantial decolorizing effect. In the plant the filtration run starts off with no cake but may build up a cake thickness of one-half to three-quarters of an inch by the end of the operation. By contrast, the laboratory bleach has a very thin coating of adsorbent on the filter paper.

There also are factors that produce a variation in the ratio of plant to laboratory dosage to give the same bleached color. For example, plants differ from each other in operating conditions, in the size of the bleach tank, and size and type of filter press, also in bleaching equipment. Some are atmospheric batch, others are vacuum-batch, and still others are vacuum, continuous units.

### Summary

Data have been presented to illustrate the effect of oxidation in the decolorizing of tallow. In most cases the effect was detrimental to the color of the decolorized fat. However, in the case of a Prime Tallow, oxidation proved beneficial from the standpoint of obtaining a lower color.

### REFERENCES

1. Bailey, A. E., "Industrial Oil and Fat Products," 2nd ed., Interscience Publishers Inc., New York (1951).
2. Baldwin, A. R., *J. Am. Oil Chemists' Soc.*, **26**, 610 (1949).
3. Daubert, B. F., *J. Am. Oil Chemists' Soc.*, **26**, 553 (1949).
4. Freyer, E. B., *Oil and Soap*, **22**, 153 (1945).
5. James, E. M., *J. Am. Oil Chemists' Soc.*, **19**, 485 (1952).
6. King, R. R., and Wharton, F. W., *J. Am. Oil Chemists' Soc.*, **26**, 201 (1949).
7. Rich, A. D., *J. Am. Oil Chemists' Soc.*, **31**, 374 (1954).

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## Report of the Examination Board—1957-58

**D**URING the year ended May 31, 1958, among their various members, 41 commercial laboratories were granted Referee Certificates from the Examination Board of the American Oil Chemists Society, as follows:

- 5—Cottonseed, Oil Cake and Meal, Fatty Oils, and Tallow and Grease
- 16—Cottonseed, Oil Cake and Meal, and Fatty Oils
- 8—Cottonseed and Oil Cake and Meal
- 2—Oil Cake and Meal, Fatty Oils, and Tallow and Grease
- 1—Oil Cake and Meal and Fatty Oils
- 6—Oil Cake and Meal
- 2—Fatty Oils
- 1—Tallow and Grease

All laboratories certified for Oil Cake and Meal were automatically certified for Protein Concentrates.

In October, 1957, following the Cincinnati meeting, the

Examination Board completed its rules governing requirements for referee certification and revised the application blank. In addition, the Examination Board, beginning this year, will issue only one certificate per laboratory containing the names and certification of each applicant member from said laboratory.

During the year the Memphis Testing Laboratory, Memphis, Tenn., ceased operations. Referee certification of the members was withdrawn, and the cottonseed and soybean trade associations were notified.

The chairman extends his thanks to all members of the Examination Board and to R. W. Bates for their efficient cooperation.

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E. R. HAHN  
R. R. KING  
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