



Fig. 5. Decrease in flavor score and increase in peroxide content of "washed-citrated" and "unwashed" samples stored at room temperature.

While the results presented here are compatible with the hypothesis that phospholipids are responsible for the flavor instability of soybean oil, no direct evidence of their implication has yet been obtained by us. Experiments are underway to test the "lecithin hypothesis" and other German claims. Obviously much remains to be done both in the laboratory and on a commercial scale, on shortenings as well as oils, before the practical value of this process for improving the flavor stability of soybean oil can be ascertained.

#### Summary

The future of the soybean oil industry depends in part upon increasing the flavor stability of edible soybean oil. A procedure, which is reported to have been used by the German soybean oil refiners for combating flavor instability, has been tested on lab-

oratory scale and appears to have distinct merit. Oils subjected to a particularly thorough degumming operation and to the subsequent addition of a small amount of citric acid during deodorization possessed a significantly higher flavor stability than did those subjected to a conventional type of refining.

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#### REFERENCES

1. Alderks, O. H., *Oil and Soap* 22, 232-238 (1946).
2. Robinson, H. E., and Black, H. C., *Ind. Eng. Chem.* 37, 217-219 (1945).
3. Boggs, M. M., Dutton, H. J., Edwards, B. G., and Fevold, H. L., *Ind. Eng. Chem.* 38, 1082 (1946).
4. Goss, W. H., *Processing Oilseeds and Oils in Germany*, *Oil and Soap* 23, 241-244 (1946).
5. Goss, W. H., *Report on Germany—Fats, Oils, and Oilseeds. Summary on Investigations*, Publication No. 1270, Publication Board, U. S. Dept. of Commerce, Washington, D. C. (1946).
6. Moser, H. A., Jaeger, C. A., Cowan, J. C., and Dutton, H. J., *J. Am. Oil Chemists' Soc.* 24 (1947).
7. McGuire, T. A., Earle, F. R., and DuHon, H. J., Unpublished manuscript.
8. Pool, M. F., and Prater, A. N., *Oil and Soap* 22, 215-216 (1945).
9. Wheeler, D. H., *Oil and Soap* 9, 89-97 (1932).
10. Markley, K. S., *Industry of Germany and the Occupied Countries, Fats, Oils and Oilseeds*, Fiat Final Report No. 414, Publication Board, Dept. of Commerce, Washington, D. C. (1946).

## Report of the Referee Examining Board 1946-47

FOR the year 1946-7 30 referee certificates were issued, including 27 renewals. The routine work of the Referee Board, but not of the Society, has been considerably decreased by transfer of responsibility for check seed and check oil samples to the Smalley Foundation Committee. The performance of the laboratories of the referee chemists on all the check samples is being followed as closely as ever by the Referee Board.

Although none of the problems of the Referee Board require action by the Society at the present time, there is one question which should perhaps be brought to the attention of the membership. At present the check samples afford the most effective means of maintaining a high standard of performance of referee laboratories. Regular use of check samples is practical only where large numbers of laboratories have intensive interest in the same test methods, such as refining tests for grading cottonseed oil.

It is relatively simple to provide check samples for referee chemists when the demand for referee certifi-

ates comes almost entirely from members who are interested also in appointment as Official Chemists of either the National Cottonseed Products Association or the National Soybean Processors Association. The problem becomes more difficult when applications are made for certificates reading on miscellaneous products by laboratories interested only in the prestige arising from the approval of our Society. There are signs of a growing interest in certificates reading on miscellaneous products, and this may lead to a situation making it very difficult for any Committee to vouch for the accuracy of a laboratory's work. If the problem becomes a serious one, the Society and not the Referee Board should decide whether or not our Referee Certificates should be limited to a relatively small list of products.

G. W. AGEE  
E. B. FREYER  
J. P. HARRIS  
S. O. SORENSEN  
A. S. RICHARDSON, chairman