over that at the maximum, normally below 20%, was as high as 85% in rancid oils. Because of this large background absorbance the spectrophotometric determination for sesamin could not be applied to the rancid oils. Judging by odor, oil K-10-1-1-1 after 2 months seemed to have just turned rancid.

The second part of Table III shows that sesame oil exposed to 100°F. as the seed in open 600-ml. beakers was much more resistant to rancidity than when the oil itself was exposed. The sesamin and sesamolin content were unaffected over a 6-month period although the sesamol content rose toward the end of this period. The free fatty acids content also tended to be slightly higher. None of the oils became rancid for the peroxide values remained low and even showed a tendency toward becoming lower.

It should be pointed out that threshing methods required for the three experimental indehiscent strains were much more severe than for the dehiscent check, K-10. Damage in threshing of the indehiscent strains resulted in the lower germination percentages shown in Table III. K-10 had little or no original seed damage, a fact that is reflected in its high germination percentage. Any influence on experimental findings must be considered in the light of differences in damage in the original seed. The materials were chosen with this point in mind. It is heartening to note that the seed damage in the three indehiscent strains did not impair the ability of these seeds to resist rancidity upon exposure to 100°F. for six months.

The data in the first part of Table III show that the oils turned rancid before any appreciable amount of sesamol was formed. Furthermore there is no relationship between the amount of sesamolin and ability to resist rancidity. Under the conditions of the test it appears that the sesamolin content did not affect the stability of the oil. As pointed out by Budowski *et al.* (5), hydrogenation—or more correctly hydrogenolysis because of our knowledge of the formula of sesamolin (4)—of the sesamolin in the oil liberates sesamol, which markedly stabilizes the oil. The presence of sesamolin therefore contributes toward the stability of sesame oil when the oil is hydrogenated. Budowski and coworkers further showed that alkali-refining or deodorization will remove free sesamol and thereby reduce the resistance of the oil to oxidative rancidity.

### Effect of Frost

The previous finding that the sesamin and sesamolin contents of the oil are lowered after frost damage of the seed (3) was confirmed by the data in Table IV. Again the sesamin content was more markedly lowered by frost damage than the sesamolin content. Since the purpose that sesamin and sesamolin serve in the plant is unknown, it is possible that these compounds aid in the biological defense of the plant.

TABLE IV
Effect of Frost on Percentages of the Three Constituents of Sesame Oil

| Time of Harvest | Sesamin | Sesamolin | Sesamol |
|---|---|---|---|
| Before frost | 0.404 | 0.349 | 0.0003 |
| After first light frost | 0.247 | 0.292 | 0.0001 |
| After second light frost | 0.159 | 0.220 | 0.0000 |

### Summary

The effect of strain and location grown on the sesmin, sesamolin, and sesamol content of oils from sesame seed chosen to represent a wide variety of genetic material is reported. Only differences in sesamin content due to strain were significant.

Three of four oils exposed as the oil to 100°F. became rancid in two to three months. Rancidity of the oil was accompanied by lesser sesamin and sesamolin contents, and the ultraviolet spectrum of the oil was much altered. Oil from seed exposed as the seed to the same conditions for six months did not become rancid even though most of the seeds were damaged in threshing. The sesamol content of all the oils subjected to the accelerated ageing procedure increased, but the increase was greatest in the rancid oils.

Frost damage of sesame seed markedly diminished the sesamin and sesamolin content of the oil.

### Acknowledgment

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## ERRATUM

E. W. Eckey writes that an error has been made in the paper entitled "Production of Polyvinyl Esters by Ester Interchange," by himself, R. O. Alderson, and R. J. Woestmann in the April issue of the Journal of the American Oil Chemists' Society. The error was apparently made in make-up at the printer's since it did not appear in the galley proof. Three lines were omitted from one paragraph, and three lines from the succeeding paragraph were inserted. As a result, these three lines appear twice.

On page 187 the last three lines of the paragraph beginning "Hydrogenated Sardine Oil" (near the bottom of the first column) should read thus: "used. It had the following characteristics: Acid V., 0.3; Sap. V., 192; I.V., 123; Capillary Melting Point, 60° C.; Cloud Point, 40°C."