

A Note on the Keeping Quality of Crude Peanut Oil

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THE results obtained in a few preliminary experiments conducted in the Oil, Fat and Wax Laboratory of the Bureau of Chemistry to illustrate the changes which crude peanut oil undergoes during storage are tabulated here. The oils used were expressed hot from shelled peanuts at the laboratory. A portion of the oil was filtered immediately through paper and approximately 500 grams of the filtered oil was placed in a bottle large enough to leave an air space of about 150 cc. above the oil. With the exception of Oils 1 and 2, similar samples of the unfiltered oils containing some of the foots also were collected. The bottles were corked and the samples stored in the laboratory. During the period of storage the temperature of the

samples ranged from about 19° to 25° C., the temperature most of the time being 21° or 22° C. The acidity of the oils was determined as soon as possible after expression and from time to time thereafter. It is reported here as the "acid value," the number of milligrams of potassium hydrate required to neutralize the free fatty acids in one gram of oil. The "acid value" multiplied by the factor 0.502 gives the percentage of free fatty acids in terms of oleic acid.

The results here reported indicate that if all of the foots are removed from the crude peanut oil the keeping quality is very good indeed, but that allowing the crude oil to remain in contact with the foots causes the oil to deteriorate. There-

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PEANUT OIL (Acid Values)

| Sample 666 | 1924 | | | 1925 | | | | | | |
|---------------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|------------|-----------|
| | Aug. 1 | Oct. 8 | Nov. 20 | Jan. 7 | Feb. 7 | Mar. 7 | Apr. 4 | May 12 | June 16 | July 7 |
| 1 Filtered | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.53 | 0.56 | 0.56 |
| 2 Filtered | | 0.68 | | 0.68 | 0.68 | 0.68 | 0.72 | 0.75 | 0.75 | 0.75 |
| 3 Filtered | 0.65 | 0.65 | 0.72 | | 0.72 | 0.72 | 0.72 | 0.75 | 0.75 | 0.75 |
| 3 + Foots | 0.71 | 0.90 | 1.12 | 1.17 | 1.25 | 1.35 | 1.50 | 1.59 | 1.70 | 1.81 |
| 4 Filtered | | | | | | | | 0.62 | 0.67 | 0.70 |
| 4 + Foots | | | | | | | | 0.62 | 0.67 | 0.89 |
| 5 Filtered | | | | | | | | 0.62 | 0.67 | 0.67 |
| 5 + Foots | | | | | | | | 0.62 | 0.78 | 0.86 |

PEANUT OIL (Acid Values)

| | 1926 | | | | | | | Acid- ity in- crease | Period of storage months | |
|------------|------------|------------|------------|------------|------------|-----------|------------|----------------------------|-----------------------------------|-----------|
| | Aug. 10 | Sept. 1 | Oct. 10 | Nov. 14 | Dec. 12 | Feb. 6 | Apr. 10 | | | June 7 |
| 1 Filtered | 0.56 | 0.56 | 0.56 | 0.58 | 0.58 | 0.66 | 0.66 | 0.66 | 0.16 | 22 |
| 2 Filtered | 0.75 | 0.78 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.12 | 20 |
| 3 Filtered | 0.75 | 0.78 | 0.80 | 0.82 | 0.82 | 0.89 | 0.94 | 1.06 | 0.41 | 22 |
| 3 + Foots | 2.00 | 2.01 | 2.04 | 2.17 | 2.28 | 2.39 | 2.59 | 2.62 | 1.90 | 22 |
| 4 Filtered | | 0.70 | 0.72 | 0.72 | 0.78 | 0.78 | 0.78 | 0.80 | 0.18 | 13 |
| 4 + Foots | 1.00 | 1.06 | 1.22 | 1.34 | 1.36 | 1.50 | 1.61 | 1.70 | 1.08 | 13 |
| 5 Filtered | 0.67 | 0.67 | 0.69 | 0.69 | 0.69 | 0.72 | 0.78 | 0.78 | 0.16 | 13 |
| 5 + Foots | 0.95 | 0.98 | 1.11 | 1.17 | 1.19 | 1.25 | 1.33 | 1.36 | 0.74 | 13 |