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### NOTE ON ALMOND AND APRICOT KERNEL OILS.

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IN a paper by Lewkowitsch (*ANALYST*, 1904, **29**, 105), the characteristics of almond and allied oils are discussed, but the fatty acids were not fully examined.

By the kindness of Messrs. Stafford Allen and Sons we were placed in possession of a sample of almond oil and one of apricot kernel oil of undoubted authenticity, and the following are the analytical results obtained :

|  | Almond Oil. | Apricot Kernel Oil. |
|--|-------------|---------------------|
| Iodine value ... ..                          | 98.3        | 101.4               |
| Saponification value ... ..                  | 194.7       | 192.4               |
| Zeiss butyro-refractometer reading at 40° C. | 57.5        | 57.5                |
| Refractive index at 20° C. :                 |             |                     |
| Nd ... ..                                    | 1.4717      | 1.4717              |
| Nc ... ..                                    | 1.4691      | 1.4690              |
| Nf ... ..                                    | 1.4782      | 1.4783              |
| Ng ... ..                                    | 1.4837      | 1.4838              |
| Reichert-Meissl value ... ..                 | 2.6         | 2.6                 |
| Polenske number .. ..                        | 0.6         | 0.8                 |
| Acetyl value (true) ... ..                   | 9.67        | 12.28               |
| Specific gravity 15.5/15.5° C. ... ..        | 0.9197      | 0.9198              |
| Shrewsbury and Knapp figure ... ..           | 18.7        | 22.0                |

## INSOLUBLE FATTY ACIDS.

|  |        |        |
|--|--------|--------|
| Iodine value ... ..                          | 99.2   | 103.4  |
| Saponification value ... ..                  | 201.6  | 199.8  |
| Zeiss butyro-refractometer reading at 25° C. | 58.0   | 59.0   |
| Refractive index at 25° C. :                 |        |        |
| Nd ... ..                                    | 1.4644 | 1.4645 |
| Nc ... ..                                    | 1.4622 | 1.4622 |
| Nf ... ..                                    | 1.4710 | 1.4711 |
| Ng ... ..                                    | 1.4761 | 1.4762 |

## DISTILLATION OF FATTY ACIDS AT 40 M.M. PRESSURE—ALMOND OIL.

| Fraction.      | Zeiss (25° C.). | Iodine Value. | Saponification Value. |
|----------------|-----------------|---------------|-----------------------|
| 1 ... ..       | 44.0            | 82.9          | 205.1                 |
| 2 ... ..       | 45.0            | 84.7          | —                     |
| 3 ... ..       | 47.0            | 88.0          | —                     |
| 4 ... ..       | 48.5            | 89.9          | —                     |
| 5 ... ..       | 51.0            | 91.2          | —                     |
| 6 ... ..       | 55.5            | 96.7          | —                     |
| Residue ... .. | 82.0            | 119.3         | 194.6                 |

## APRICOT KERNEL OIL.

|                |      |       |       |
|----------------|------|-------|-------|
| 1 ... ..       | 46.0 | 85.2  | 203.7 |
| 2 ... ..       | 47.0 | 87.1  | —     |
| 3 ... ..       | 49.0 | 89.6  | —     |
| 4 ... ..       | 49.5 | 90.3  | —     |
| 5 ... ..       | 52.0 | 93.1  | —     |
| 6 ... ..       | 57.0 | 97.5  | —     |
| Residue ... .. | 86.5 | 129.6 | 193.7 |

The Bieber reaction was given by the apricot kernel oil, and even after being subjected to steam distillation for some hours, the residue gave the reaction strongly but not the distillate.

This colour reaction is therefore not due to a volatile constituent. Further, after keeping for a year and then bubbling air through the warm oil for three days

the reaction was still strong, and as little as 5 per cent. could be detected when mixed with almond oil.

This test, according to our experience, is the only reliable one. The results given above certainly seem to confirm the opinion expressed by some authorities—viz., that the two oils are so similar in composition that for practical purposes they may be considered as identical.

We are informed from an authentic source that peach kernel oils, as such, hardly ever come on the market. Apricot and peach kernels are, however, often used together, and the oil thus obtained cannot be distinguished from apricot kernel oil.

The following table gives the limits of the figures obtained from the analysis of four samples of almond and three samples of apricot kernel oil bought commercially, and also the figures for one sample sold as peach kernel oil :

|   | Limits of Four<br>Samples of<br>Almond Oil. | Limits of Three<br>Samples of Apricot<br>Kernel Oil. | Peach<br>Kernel<br>Oil. |
|---|---|--|-------------------------|
| Iodine value ... ..                                 | 97 to 102                                   | 100 to 106   | 101·6                   |
| Saponification value ... ..                         | 183·3 to 207·6                              | 184 to 192·4   | 191·7                   |
| Specific gravity, 15° C./15° C.                     | 0·9178 to 0·9199                            | 0·9198 to 0·9200                                     | 0·9167                  |
| Zeiss butyro-refractometer reading at 40° C. ... .. | 57·5° to 58°                                | 57° to 58·5°   | 55·5°                   |
| Bieber reaction ... ..                              | nil   | strong   | strong                  |

#### FATTY ACIDS.

|   |              |            |       |
|---|--------------|------------|-------|
| Saponification value ... ..                         | 200·4 to 207 | 197 to 202 | 201·6 |
| Zeiss butyro-refractometer reading at 25° C. ... .. | 56° to 58°   | 57° to 59° | 53°   |

Mr. C. A. Hill writes :

“In my experience the iodine value of apricot kernel oil is distinctly higher than that of almond oil. A number of samples of each during the past three years have given

|                     |                             |                                       |
|---------------------|-----------------------------|---------------------------------------|
| Iodine value ... .. | Almond Oil.<br>... 93 to 98 | Apricot Kernel Oil.<br>... 100 to 110 |
|---------------------|-----------------------------|---------------------------------------|

“Although the analytical data afforded by almond and peach kernel oils are very similar, and may even overlap, I cannot concur with the opinion that on this account the oils may be considered as identical.

“The authors give Zeiss readings at 40° and at 25° C., and refractive indices at 25° and at 20° C. I think it far preferable to have one standard temperature for refractive indices of fixed oils, and that this should be 40° C.”

