

component, camphor, was detected in the West Indian oil. Linalool was present in Samples A (10.6%), B (8.1%), and D (5.9%), while it was not observed in Sample C of East Indian variety. The same observation was made as far as geraniol is concerned. We found 3.6% present in the West Indian sample, while two samples of the East Indian variety contain 0.3 and 11.9%, respectively.

The amount of α -terpineol varies depending on the sample of the oil (Table IV). Westway and Williams (10) did not report the percentage of α -terpineol in the oil they investigated.

In 1907 (9), safrole was reported present in about 0.6% in the oil of Ceylon nutmeg. Our analysis confirmed its presence in the East Indian oils only. The amount ranges from 4.2 to 6.0%. This same report mentions the presence of about a total of 0.2% of eugenol and isoeugenol in the oil from Ceylon. A peak corresponding to the retention time of isoeugenol was not observed in the chromatograms. We have observed eugenol in varying amounts in all three samples of the East Indian variety. Samples A, B, and C contain 1.3, 3.8, and 0.3%, respectively, of eugenol.

One of the constituents of the oil, which was not yet reported in literature, was isolated from the oil, using gas chromatography; an infrared spectrum was run. This constituent, which ranges from as low as 1.7% in the West Indian sample to as high as 25.9% in Sample C of the East Indian variety, was tentatively labeled as "Unknown A."

SUMMARY

Four commercially available samples of nutmeg oil were analyzed by gas-liquid chromatography,

using 20% Reoplex 400 column. Relative retention times and enrichment procedure were used to identify the constituents of the oils. In some instances infrared spectra were employed.

The following components were present in the three samples of East Indian variety and in the West Indian sample: α -pinene, β -pinene, limonene, *p*-cymene, terpinen-4 ol, α -terpineol, and Unknown A. Terpinolene was found in small amounts and only in two samples of East Indian oil, while linalool and geraniol are absent in one sample of East Indian nutmeg oil. Safrole and eugenol were present in all three samples of the East Indian variety but were not observed in the West Indian sample. Camphor was found in the West Indian oil only.

Differences are also observed between the percentages of the components present not only compared to those listed in the literature but also between the oils analyzed.

REFERENCES

- (1) Gildemeister, E., "The Volatile Oils," Vol. II, John Wiley and Sons, Inc., New York, N. Y. 1948, p. 18.
- (2) Guenther, E., "The Essential Oils," Vol. V, D. Van Nostrand Co., Inc., New York, N. Y., p. 64.
- (3) *Ibid.*, p. 65.
- (4) Swing, J. M., *Spice Mill*, 72, No. 2, 48(1949).
- (5) Whitaker, U. S. Department of Commerce, Foreign Commerce Weekly, Washington, D. C., 25(November 23, 1946) p. 8; through Guenther, E., "The Essential Oils," Vol. V, D. Van Nostrand Co., Inc., New York, N. Y., 1952, p. 63.
- (6) Finnemore, H., "The Essential Oils," D. Van Nostrand Co., Inc., New York, N. Y., 1928, p. 273.
- (7) Power, F. B., and Salway, A. H., *J. Chem. Soc.*, 91, 2040(1907).
- (8) *Ibid.*, 91, 2040(1907) Transactions Pt. 2.
- (9) "Semi-Annual Report of Schimmel and Co.," Fritzsche Brothers, New York, N. Y., April 1910, pp. 80-82.
- (10) Westaway, H., and Williams, J. F., *J. App. Chem.*, 9, 440-444(1959).

ERRATUM

In the paper titled "Absorption, Metabolism, and Excretion of the Semisynthetic Penicillin 6 (2-Ethoxy-1-naphthamido)penicillanic Acid (Nafcillin)" (1), a broken line represents intramuscular and a solid line represents oral groups of dogs in Figs. 1-3.

- (1) Walkenstein, S. S., Wiser, R., LeBoutillier, E., Gudmundsen, C., and Kimmel, H., *THIS JOURNAL*, 52, 763 (1963).