## CONSTITUENTS OF THE ESSENTIAL OIL OF EUCALYPTUS FICIFOLIA

## By L. H. BRIGGS\* and J. P. BARTLEY\*

[Manuscript received December 3, 1969]

Eucalyptus ficifolia F. Muell., restricted to the south-east area of Western Australia, has been introduced into New Zealand under the name of scarlet flowering gum. The essential oil, obtained in 0.18% yield, has been shown by preparative gas-liquid chromatography (g.l.c.) to contain  $\alpha$ - and  $\beta$ -pinene, limonene,  $\gamma$ -terpinene, *p*-cymene, and possibly  $\alpha$ -thujene and  $\Delta^3$ - or  $\Delta^4$ -carene.

## Experimental

The fresh leaves  $(5 \cdot 1 \text{ kg})$  from a young tree growing in the Auckland Domain (Auckland Museum Herbarium No. 109598), when steam-distilled by cohobation, yielded a yellow oil  $(9 \cdot 1 \text{ g})$ ,  $n_D^{20} \cdot 1.4768$ . The infrared spectrum showed no peaks due to an oxygen function and g.l.c. indicated a mixture of terpenes and the absence of sesquiterpenes. The retention volumes of the seven constituents on five different analytical columns are recorded in Table 1. Preparative g.l.c. was carried out on an Aerograph A-700 Autoprep using a 20-ft column packed with  $30\% \beta_{\beta}$ '-oxydipropionitrile on 60/80 Chromosorb P.

tpp, triphenyl phosphate								
Peak No.	Yield (%)	odp (100°)	dnp (135°)	tpp (120°)	Apiezon L (150°)	SE40 (150°)	Estim. B.P.	Compound
1	63	0.34	0.50	0.46	0.71	0.66	158°	∝-pinene
<b>2</b>	$4 \cdot 7$	0.35				_		∝-thujene?
3	$7 \cdot 7$	0.62	0.70	0.57	0.83	0.73	164	$\beta$ -pinene
4	$0 \cdot 5$	0.65	0.80					$\Delta^3$ - or $\Delta^4$ -carene?
5	$2 \cdot 3$	$1 \cdot 00$	$1 \cdot 00$	$1 \cdot 00$	$1 \cdot 00$	$1 \cdot 00$	175	limonene
6	$13 \cdot 9$	$1 \cdot 31$	$1 \cdot 17$	$1 \cdot 12$	$1 \cdot 20$	$1 \cdot 11$	180	y-terpinene
7	$7 \cdot 7$	$2 \cdot 08$	1.78	$1 \cdot 41$	1.13	$2 \cdot 10$		p-cymene

## TABLE 1

RETENTION VOLUMES

Volumes are relative to limonene. odp,  $\beta_i\beta'$ -Oxydipropionitrile; dnp, dinonyl phthalate; tpp, triphenyl phosphate

The constituents corresponding to peaks 1, 3, 5, 6, and 7 were identified by their physical and spectral data with  $\alpha$ -pinene,  $\beta$ -pinene, limonene,  $\gamma$ -terpinene, and *p*-cymene, respectively. The constituents corresponding to peaks 2 and 4 were obtained in insufficient amounts for physical measurements but from the retention volumes recorded by Klouwen and Ter Heide<sup>1</sup> on a similar column they are probably  $\alpha$ -thujene and  $\Delta^3$ - or  $\Delta^4$ -carene respectively.

\* Department of Chemistry, University of Auckland, Private Bag, Auckland, New Zealand. <sup>1</sup> Klouwen, M. H., and Ter Heide, R., J. Chromat., 1962, 7, 297.

Aust. J. Chem., 1970, 23, 1499