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THE ODOUR OF OPERCULARIA ASPERA (GOERTN).

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# THE ODOUR OF OPERCULARIA ASPERA (GOERTN).

By G. LAHEY and MAURICE D. SUTHERLAND

The unpleasant odour of *Opercularia aspera* is caused by the presence of methyl mercaptan.

*Opercularia aspera* (Goertn) is a scant shrub which is fairly widely distributed in Queensland, and grows strongly on the southern slopes of Mount Glorious. It has a markedly unpleasant odour, similar to crude carbon bisulphide, which is noticeable in the vicinity of the plant, but much stronger when the leaves are crushed. This has led to the use of common names such as "shitweed", and to the suggestion that the odour is due to skatole or a similar substance.

Methyl mercaptan has now been shown to be present in this plant, whereas a sensitive test has failed to reveal the presence of indole or skatole. As methyl mercaptan has a most offensive smell, which can be detected in minute concentration by the nose<sup>1</sup>, the characteristic odour of the plant is certainly due to the presence of this substance. Also obtained from the plant was a very small quantity of essential oil which would, however, contribute only very slightly to the odour.

The presence of methyl mercaptan in certain other plants has been noted. Nakamura<sup>2</sup> showed that ground roots of *Raphanus sativus* (*Cruciferae*) yielded methyl mercaptan on steam distillation. In addition to *O. aspera*, other members of the *Rubiaceae* family, namely, four species<sup>3</sup> of the *Lasianthus* genus and *Coprosma foetidissima*<sup>4</sup> have odours attributed to this substance. Yet other members of the *Rubiaceae* are known to have similar unpleasant odours.

## *Experimental.*

About three pounds of leaves and stems collected at Mount Glorious were distilled the following day. The apparatus consisted of a four-gallon can fitted with an oil trap and a reflux condenser, from the top of which a tube led into a receiver, containing 10 ml. of methyl alcohol, cooled in a dry ice acetone bath. The plant material in the can was boiled with a gallon of water for one hour, during which time a trace of oil collected in the oil trap. The strongly-smelling methyl alcohol solution in the cooled receiver was treated with 10 ml. of methyl alcoholic mercuric cyanide solution. The strong odour disappeared, and about 50 mg. of a yellowish precipitate separated, was filtered, washed with methyl alcohol, and crystallized from ethyl acetate. Colourless needles were obtained which when placed in the apparatus at 170° had m.p. 175-176° with decomposition. Authentic methyl mercury mercaptide<sup>5</sup> of identical melting point caused no depression of the melting point when mixed with the natural material.

We wish to thank Mr. L. Webb of the Drug Plant Survey Section, C.S.I.R. who drew our attention to the plant, and Mr. Francis, Assistant Government Botanist, for botanical determinations.

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