111. *The Vapour Pressure of* trans-*Di-iodoethylene.*

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IN connexion with certain experiments on molecular scattering in gases (Fraser and Broadway, *Proc. Roy. Soc.*, in the press), we found it necessary to determine the variation of the vapour pressure of *trans*-di-iodoethylene with temperature, over a pressure range of approximately 10^{-3} mm. to 10^{-1} mm. For this purpose, the method of molecular effusion, initiated by Knudsen (*Ann. Physik*, 1909, **29**, 179; see also Fraser, " Molecular Rays," Cambridge, 1931, pp. 195 *et seq.*), was used, and we have confirmed its ability to yield accurate data with ease.

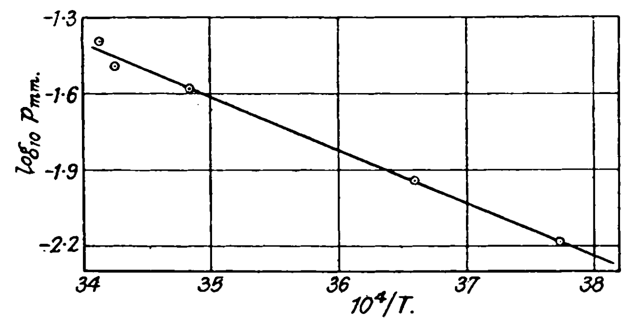
trans-Di-iodoethylene was prepared according to the method of Chavanne and Vos (*Bull. Soc. chim. Belg.*, 1914, **28**, 240); it had m. p. 72° (cf. Errera and Lépingle, *Bull. Acad. roy. Belg.*, 1925, **11**, 150) and sublimed unchanged. Its identity as the *trans*-isomeride has been established by Errera (*Physikal. Z.*, 1926, **27**, 768), who found that it has zero dipole moment.

The substance was contained in a small, uniformly heated Cu oven, carried inside an evacuated glass vessel. The vapour effused through a circular orifice, whose area was small compared with the available area of the substance, and was condensed on a large surface cooled with liquid air. The time of effusion was long compared with the time required for the oven to attain temp. equil. With these precautions, the v. p. could be derived, with an estimated accuracy of 2%, from the relation $g = pat\sqrt{M/2\pi RT}$, where g is the mass (in g.) effusing in time t, through the orifice of area a, under a pressure of p dynes/cm.², the other symbols having their usual significance.

The values found for the v. p. between − 8° and 20° were:

Temp.	−8°	1·8°	14°	19°	20°
V. p. × 10^3, mm. Hg	6·5	11·4	27·0	32·5	40·5

In the accompanying graph, $\log_{10} p_{mm.}$ is plotted against $1/T$; the points lie within the exptl.



error on a straight line, which may be represented over the range investigated by the equation $\log_{10} p_{mm.} = - 2130/T + 5{\cdot}86$, whence the latent heat of sublimation is 9720 cals./mol.

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