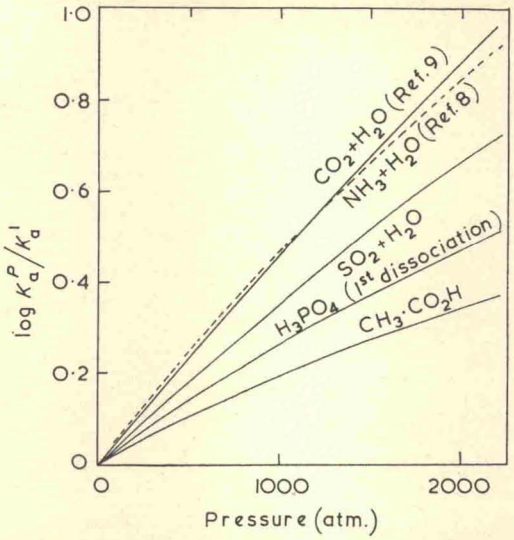
acids, acetic and phosphoric, as would be expected if sulphur dioxide is only slightly hydrated in solution.

As there is little reason for the partial molar volume of the bisulphite ion to be unusually high, the lower pressure effect for sulphur dioxide solutions relative to the other two hydrated gas systems must be due to a low partial molar volume for sulphur dioxide in solution. This is possibly owing to sulphur dioxide, with its high dipole moment and




large radius, interacting with and tending to collapse the open structure of liquid water. Carbon dioxide by comparison is a smaller molecule with zero dipole moment. Ammonia, although having a high dipole moment, is of a similar size to the water molecules and probably has a smaller effect than sulphur dioxide on the water structure.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[1] Rao, *Proc. Indian Acad. Sci.*, 1944, *A*, **20**, 292.
[2] Simon and Waldmann, *Z. anorg. Chem.*, 1956, **283**, 359.
[3] Falk and Giguere, *Canad. J. Chem.*, 1958, **36**, 1121.
[4] Jones and McLaren, *J. Chem. Phys.*, 1958, **28**, 995.
[5] De Maine, *J. Chem. Phys.*, 1957, **26**, 1036, 1049.
[6] Boyd-Campbell and Maass, *Canad. J. Res.*, 1930, **2**, 42.
[7] Morgan and Maass, *Canad. J. Res.*, 1931, **5**, 162.
[8] Hamann, " Physico-chemical Effects of Pressure," Butterworths, London, 1957.
[9] Ellis, *J.*, 1959, 3689.
[10] Clark and Ellis, *J.*, 1960, 247.
[11] Smith, Diss., 1943, Yale University.



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