

## The Iododipyridinium Ion

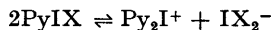
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IN the course of examining the far-infrared spectra of charge-transfer complexes formed by pyridine with iodine, iodine bromide, and iodine chloride in solution in nitromethane or an excess of pyridine, hean ions  $I_3^-$ ,  $IBr_2^-$  and  $ICl_2^-$  in addition to the dissociated complexes were identified.<sup>1</sup> A possible cationic species in these solutions is the iododipyridinium ion



which a molecular-orbital calculation suggests might possess a linear N-I-N skeleton.

To identify the bands due to this cation, the infrared spectra of iododipyridinium tetrafluoroborate and perchlorate\* in solution in pyridine, and the Raman spectrum of the tetrafluoroborate in pyridine solution, have now been examined. Comparison of the infrared bands above 300  $cm^{-1}$

with those of the solutions of iodine and iodine halides previously studied,<sup>1</sup> confirms the presence of the iododipyridinium ion in the latter solutions. Above 300  $cm^{-1}$  the frequencies are close to those of free pyridine and arise from the internal vibrations of co-ordinated pyridine. Between 300 and 100  $cm^{-1}$  the only bands are 172 (infrared) and 181  $cm^{-1}$  (Raman, polarized), which are assigned to asymmetric and symmetric N-I-N skeletal stretching respectively. The absence of coincident skeletal stretching frequencies in the infrared and Raman is consistent with a linear N-I-N skeleton as suggested by the molecular-orbital calculation. Analysis of the spectra above 300  $cm^{-1}$  is now being undertaken to investigate the coplanarity of the pyridine rings.

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\* Explosive.

<sup>1</sup> S. G. W. Ginn and J. L. Wood, *Trans. Faraday Soc.*, to be published.