

## Reactions of Sulphonyl Chloride-*NN*-Dimethylformamide Complexes

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THE interaction of *NN*-dimethylformamide (DMF) with thionyl chloride, phosphorus oxychloride, phosgene, carbonyl fluoride, and carboxylic acid halides has been extensively investigated.<sup>1-5</sup> Reactions of complex (I), formed from DMF and arylsulphonyl chlorides,<sup>1</sup> have received almost no

attention and are the subject of this communication.

Complex (I) is found to be an excellent formylating agent for certain alcohols; thus, testosterone and toluene-*p*-sulphonyl chloride in DMF give 79% of testosterone *O*-formate.<sup>6</sup> In a similar

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<sup>2</sup> H. H. Bosshard, R. Mory, M. Schmid, and H. Zollinger, *Helv. Chim. Acta*, 1959, **42**, 1653.

<sup>3</sup> H. Bredereck, R. Gompper, K. Klemm, and H. Rempfer, *Chem. Ber.*, 1959, **92**, 837.

<sup>4</sup> Z. Arnold, *Coll. Czech. Chem. Comm.*, 1959, **24**, 4048.

<sup>5</sup> F. S. Fawcett, C. W. Tullock, and D. D. Coffman, *J. Amer. Chem. Soc.*, 1962, **84**, 4275; Z. Arnold, *Coll. Czech. Chem. Comm.*, 1963, **28**, 2047.

<sup>6</sup> K. Morita, S. Noguchi, and M. Nichikawa, *Chem. and Pharm. Bull. (Japan)*, 1959, **7**, 896.

