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An Introduction to Properties, Applications and Design. Third Edition. by Michael F. Ashby and David R. H. Jones. Department of Engineering, University of Cambridge, UK. Permissions may be sought directly from Elsevier's Science and Technology Rights Department in Oxford, UK: phone: (+44) (0) 1865 843830, fax: (+44) (0) 1865 853333, e-mail: permissions@elsevier.co.uk. 15.1 Introduction 15.2 Case study 1: fast fracture of an ammonia tank 15.3 Case study 2: explosion of a perspex pressure window. More recently, three Comet aircraft were lost before it was realized that the design called for a fatigue strength that "given the design of the window frames" was greater than that possessed by the material. Abstract: We explore deep reinforcement learning methods for multi-agent domains. We begin by analyzing the difficulty of traditional algorithms in the multi-agent case: Q-learning is challenged by an inherent non-stationarity of the environment, while policy gradient suffers from a variance that increases as the number of agents grows. We then present an adaptation of actor-critic methods that considers action policies of other agents and is able to successfully learn policies that require complex multi-agent coordination. Additionally, we introduce a training regimen utilizing an ensemble of Wood in Adverse Environments by Meyer and Kellogg, May, 227 DoMing, N. E. and Ernst, H. A.: Review of The Mechanics of Fracture and Fatigue: An Introduction by Parker, May, 228 Ellis, J. J.: Mechanical sampling with stopped-belt accuracy, March, 106 Ernst, H. A.: see DoMing, N. E. and Ernst, H.A. Errera, S. J.: Review of Steel Diaphragm Roof. A Design Guide with Tables for Engineers and Architects by Bryan and Davies, March, 160 Fenves, S. J.: Review of Matrix Methods of Structural Analysis by Kanchi, Jan., 82 Findley, W. N. and Reed, R. M.: High pressure fatigue testing with results for tubing and fittings, March, 156 Goldak, J. A.: see Bibby, M. J., Chong, L.-M.