Daily Question

(due October 7, 2005, from Kozen HW5, Q1)

A right-linear grammar is a CFG (N, Σ, P, S) where every production is of the form:

$$A \;\rightarrow\; \mathtt{x}B \qquad \text{or} \qquad A \;\rightarrow\; \mathtt{x}$$

where A and B are non-terminals (i.e. $A, B \in N$), and $\mathtt{x}$ is a terminal (i.e. $\mathtt{x} \in \Sigma$).

Prove that the set of languages generated by right-linear grammars is exactly the set of regular languages.

Hint: think of the non-terminals of the right-linear grammar as states of a DFA.