On commuting nilpotent matrices

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For a nilpotent matrix B, we discuss the set $\mathcal{P}(\mathcal{N}_B)$ of all Jordan canonical forms of matrices in the nilpotent commutator of matrix B.

We give an overview of some recent results and for certain special cases of B, we give the complete lists of $\mathcal{P}(\mathcal{N}_B)$.