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A note on Hamiltonian circuits. (In English)
Discrete Math. 2, 111-113 (1972). [0012-365X]

The purpose of this note is to prove the following Theorem 1. Let G be a graph with at least three vertices. If, for some s, G is s-connected and contains no independent set of more than s vertices, then G has a Hamiltonian circuit. This theorem is sharp. For s relatively large with respect to the number of vertices of G, our Theorem 1 follows from a stronger statement due to Nash-Williams and Bondy [*C. St. J. A. Nash-Williams*, Studies pure Math., Papers presented to Richard Rado on the Occasion of his sixty-fifth Birthday, 157-183 (1971; Zbl 223.05123), Lemma 4]. As an easy consequence of Theorem 1 we obtain Theorem 2. Let G be an s-connected graph with no independent set of $s+2$ vertices. Then G has a Hamiltonian path. The technique used in the proof of Theorem 1 yields also Theorem 3. Let G be an s-connected graph containing no independnet set of s vertices. Then G is Hamiltonian-connected (i.e. every pair of vertices is joined by a Hamiltonian path).

Classification:
05C45 Eulerian and Hamiltonian graphs
05C38 Paths and cycles
05C40 Connectivity