*Economic Geology,* v. 100, pp. 385–398

# *POSSIBLE INTRUSION-RELATED GOLD SYSTEMS IN THE WESTERN LACHLAN OROGEN, SOUTHEAST AUSTRALIA*

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## Abstract

Several gold deposits occurring in the western Lachlan orogen have geological, geochemical, and geochronological characteristics that distinguish them from typical vein-hosted orogenic gold deposits of the central Victorian gold province. The latter are responsible for more than 90 percent, of primary (hard-rock) gold production from this region and are generally considered to represent the only economically significant type of gold deposit in the western Lachlan orogen. Atypical gold occurrences at Malmsbury, Myrtle Creek, Mount Piper, and the Wonga deposit in the Stawell goldfield are characterized by a close spatial and temporal association with posttectonic felsic intrusions, disseminated to stockwork-style mineralization, alteration dominated by sericitization, sulfidation, silicification, carbonatization and tourmalinization, and associated complex Au ± Mo-W-Bi-Te-Cu. The deposits have a number of features in common with intrusion-related gold deposits elsewhere in Phanerozoic orogenic belts. Although production from this type of gold mineralization in the western Lachlan orogen has been small compared to orogenic gold deposits, the possible existence of intrusion-related gold deposits has potentially important implications for exploration in this region and also provides significant clues to the tectonic framework and Paleozoic metallogeny of eastern Australia.

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0361-0128/01/3502/385-14 $6.00