

Amazonia, but he has taken the trouble to visit other gold-mining areas in the region. He specifically sets out to discuss the cultural and environmental impact of gold mining throughout the Amazon Basin, and his descriptive and analytical treatment of the subject is masterful.

Amazonia has witnessed several extractive boom-and-bust cycles in the past, with rubber the most famous. The present gold rush in Amazonia began in earnest in 1979, when the price of the precious metal soared on international markets. The Serra Pelada strike in southern Pará, Brazil, ignited a massive stampede for alluvial gold in Amazonia. In 1983, close to 100 thousand itinerant miners (*garimpeiros*) were removing about a ton of gold a month from Serra Pelada, a once forested mountain now reduced to an open pit.

Although easily recoverable gold from denuded Serra Pelada is essentially exhausted, approximately 300 thousand *garimpeiros* still pan for gold in the forests and water courses throughout Amazonia. The Brazilian Amazon produces about 100 tons of gold a year worth an estimated \$1 billion; almost all of it is produced by the informal sector. Intrepid *garimpeiros* in Amazonia have catapulted Brazil into third place in global gold production, after South Africa and the Soviet Union.

Cleary's book is a major contribution because so much of the gold mining in Amazonia and other tropical forest regions is undertaken by the informal sector, where reliable statistics are virtually nonexistent. Fieldwork in remote areas, combined with interviews with knowledgeable geologists and a careful screening of historical literature, have produced a unique book, one that will be a landmark for all those concerned with extractive industries in the Third World.

Anatomy of the Amazon Gold Rush carefully traces the historical antecedents to gold mining, examines the roots of the technologies employed, and analyzes the social relations within gold-mining areas and with the outside world. An in-depth description of gold-mining technologies is provided, complete with photographs. Firsthand experience has enabled Cleary to describe how miners organize themselves at a find, and how they minimize conflicts. Gold mining can be a potent recipe for violence, and yet *garimpeiros* have learned to cooperate with each other. Social disorders are usually triggered when landowners attempt to restrict access to gold deposits.

Cleary points out the traditional rivalry between mining companies and the *garimpeiros*. Itinerant miners are usually cast as inefficient, a major rationale for the Brazilian govern-

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David Cleary's book is a most timely contribution, Amazonia is experiencing one of the greatest gold rushes of all time, yet little has been written about this feverish activity that has profound socioeconomic and ecological implications. Cleary's fieldwork is based mainly in gold fields on the eastern fringe of

ment's decision to eject 20,000 cassiterite miners from Rondônia in 1970. But the state has also intervened on behalf of gold miners in the Brazilian Amazon, such as at Serra Pelada in 1980 and Cumarú, a little farther south, in 1981.

Itinerant mining has also come under criticism from the Left in Brazil. Some politicians and activists have labeled *garimpagem* (informal gold mining) as exploitation that allows "the few" to accumulate wealth. Cleary argues, however, that itinerant gold mining is one of the most promising avenues for social and economic advancement in Brazil. Social relations in gold-mining areas are not comparable to the semi-slavery conditions of some rubber tappers, for example, who are often bound to the *aviamento* system and never seem to escape from debt. Store owners in gold-mining areas do charge high prices, but their costs are also high, and there is often competition from several stores to keep a lid on prices. Only a few *garimpeiros* become fabulously wealthy, but many obtain valuable supplemental income from gold mining and periodically return to other professions, such as farming or niches in the urban sector.

Cleary also provides a balanced discussion of the impact of gold mining on Indians and the environment. Mercury contamination is one of the most serious environmental issues in Amazonia, and the health dangers of using mercury as an amalgam to extract gold from alluvial deposits are discussed. *Garimpeiros* can also introduce diseases to Indian reserves and this is discussed as well.

Few flaws can be found in this commendable effort to analyze the gold rush in Amazonia. I was disappointed with the skimpy index, a little over one page long. Also, no mention is made of the role of U.S. Steel at Carajás before the Companhia Vale do Rio Doce took over. Some estimates of the amount of time *garimpeiros* spend hunting would be helpful, as would discussion of whether they exert much pressure on game populations.

Cleary's book is especially valuable because the gold rush has spread to other tropical countries, such as Ecuador, Peru, Colombia, Guyana, parts of Central America, and equatorial Africa. Southeast Asia may yet witness a massive gold rush. As a result, this well-written book belongs on the shelf of all those concerned with Third World Development. Readers will find the analysis far-reaching and the many insights worthwhile.