

Caves of the Guadalupe Mountains

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Caves of the Guadalupe Mountains is a beautifully illustrated collection of scientific papers on some of the world's most famous caves in a classic geologic area (southeast New Mexico, USA). This "magazine-style" publication is an outgrowth of the "Caves of the Guadalupe Mountains Symposium" organized by Harvey DuChene and Carol Hill in 1996. The main focus of the publication is characteristics of caves in the Guadalupe Mountains which formed largely by dissolution involving sulfuric acid. That sulfuric acid apparently formed by oxidation of H₂S coming out of the adjacent Delaware Basin. Most of the papers concentrate on features in Carlsbad Caverns and Lechuguilla Cave, however minor caves are also discussed.

This volume contains 13 papers from experts on various facets of cave research. The articles cover a wide range of topics starting with an introduction (DuChene and Hill), then a history of development of the sulfuric acid theory (Jagnow et al.), and an overview of the geologic development of Guadalupe Mountains caves (Hill). Dating of authigenic alunite has been critical to developing a chronology of cave formation and that is summarized by Polyak and Provencio. DuChene and Martinez describe how Cenozoic erosion has destroyed many caves that were originally present in the southern Guadalupe Mountains. The effects of microbes in caves are discussed by Northup et al., and the effects of hydrochemical processes on cave patterns are discussed by Art and Peggy Palmer. DuChene describes paleontologic and sedimentologic features of the Capitan and adjacent formations on the walls of Lechuguilla Cave. In another article, Polyak and Güven describe clays and their significance in the Guadalupe Mountains caves. Pools in Carlsbad Caverns have quite variable sizes and residence times for water as shown in a geochemical study by Forbes. Lechuguilla Cave has been protected since its discovery, and the chemical history of its pools is summarized by Turin and Plummer. In a geologic breakthrough reported by Lundberg et al., extremely coarse calcite cements partially filling caves have yielded U-Pb ages of approximately 90 Ma indicating that significant caverns were present during Laramide time. The final article by Davis is a description of spectacular speleogenic features in Lechuguilla Cave. This final article contains exquisite color photographs from the cave.

Caves of the Guadalupe Mountains is a wonderful, comprehensive set of papers that nicely summarize our current understanding of these classic caves. It is published by the National Speleological Society, and is apparently written primarily for their membership; however, it is great for all geologists interested in caves or visiting the Guadalupe Mountains. The beautiful, clear photographs throughout the publication make it unique. At a cost of \$9, the price is right for even the most financially challenged geoscientist.

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