Rock Structures

Diapirism and Diapirs. A symposium. Including papers presented at the 50th annual meeting of the American Association of Petroleum Geologists, New Orleans, April 1965, and some others. JULES BRAUNSTEIN and GERALD D. O'BRIEN, Eds. American Association of Petroleum Geologists, Tulsa, Okla., 1968. viii + 444 pp., illus. $16; to AAPG and SEPM members, $12. AAPG Memoir No. 8.

This volume includes 21 papers by 32 authors on the mechanics of diapirism and on specific diapiric structures. In addition, there is an indexed bibliography of diapirism and diapirs compiled by the editors of the book. The diapiric structures considered include serpentinite, mud, shale, peat, pingos, and salt. Because of the great reserves of oil, gas, sulfur, and other minerals associated with diapiric structures, the subject matter is of vital interest to a wide variety of scientists and engineers.

The theoretical aspects of diapirism—both qualitative and quantitative—are treated in the first six papers by G. D. O'Brien, W. F. Tanner and G. K. Williams, W. C. Gussow, H. Odé, D. H. Kupfer, and W. R. Muehlberger and P. S. Clabaugh. Salt structures of the Gulf Coast basin are reviewed by G. E. Murray. The geophysical aspects of diapiric shale masses are summarized by A. W. Musgrave and W. G. Hicks and by J. A. Gilreath. Mudlumps and mud diapirs are described by J. P. Morgan, J. M. Coleman, and S. M. Gagliano, and by P. S. Freeman. An unusual example of peat diapirism in the Netherlands is reported by W. R. Paine, and serpentine diapirs in California are described by G. B. Oakeshott.

The remaining papers deal with salt diapirs from the Canadian Arctic (D. B. Gould and G. de Mille), the Paradox basin of Utah (R. B. Mattox), the Mexican Isthmus of Tehuantepec (H. Contreras and M. Castillón), northwestern Germany (D. Sannemann), the Pyrenees and northwestern Spain (R. Brinkmann and H. Lögters, L. W. Sappenfeld and E. R. Schroeder), Australia (C. R. Dalgarno and J. E. Johnson), and Cuba (A. A. Meyerhoff and C. W. Hatten).

The indexed bibliography contains approximately 1800 entries, and is one of the most thorough bibliographies published on diapirism and diapirs. It is not complete, but will lead any researcher to the material which he needs.

The papers are well written, well edited, and — most important — truly informative, containing much material presented for the first time. The only regret which I had regarding the book was that papers dealing specifically with the diapiric regions of Iran, the Caspian Sea, Rumania, West Africa, the Canadian Maritime Provinces, and eastern Peru were not included. In spite of these omissions, the volume represents the most comprehensive work of its kind on the subject. It should be a valuable reference to geologists and geophysicists, as well as to physicists and engineers interested in the mechanics of diapirism and deformation of certain crystal forms. The bibliography alone represents a sizable investment which will save countless hours for future researchers.

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Bacteriology

Microbial Protoplasts, Spheroplasts, and L-Forms. Proceedings of a conference, Kalamazoo, Mich., Nov. 1966. LUCIEN B. GUZE, Ed. Williams and Wilkins, Baltimore, 1968. xxii + 523 pp., illus. $24.50.

Fifteen years ago the subject of this symposium would have been considered heretical. Only through the persistence of a dogged few was the study of microbial protoplasts, spheroplasts, and L-forms accepted as an authentic discipline. However, acceptance without due critique is found now in some of its aspects. For example, mere observation of apparent pleomorphic forms in clinical specimens or isolation of transient microbial forms is considered evidence that wall-less bacteria are involved in disease. The same conclusion, with equivalent experimental evidence, was rejected not long ago. What has happened during this time? First, too many seemingly eccentric ideas have proven true and, second, mechanistic approaches have been added to descriptive observation.

In this compilation of papers four sections are found, dealing respectively with mechanisms of formation, morphology and functional correlations, general considerations, and role in disease. Almost every contributor has felt it necessary to define terms. Although terminology of this area is confusing and controversial, general unanimity is found throughout. Collection of these terms in a glossary would have been better.

The speculation of a few authors makes delightful reading. Mechanisms of L-formation and reversion can be singled out. Park speculates that penicillin-like antibiotics not only cause production of defective walls but also allow muralytic enzymes to be formed, thus accounting for the specific ability of these antibiotics to produce L-forms and protoplasts. Support is received from Schockman *et al.*, who found autolysins which enhanced lysozyme action in the walls of intact bacteria but not in isolated walls. Weibull demonstrated that L-forms which revert in the absence of inducing agent still contain partially degraded cell wall, while stable L-forms are bounded only by the cytoplasmic membrane. Hence, the unstable L-forms contain vestigial acceptors for wall polymer. Reversion of stable L-forms requires a change in physical environment, described by Landman as one conducive to accumulation of wall polymer without the need of priming acceptor. Disturbance of the proper deposition of wall polymer as part of the mechanism of L-formation was supported further by Cohen *et al.*, who described core-like structures, presumed to be polymeric wall components, in wall-less forms. The biosynthetic and metabolic differences between parent bacterium and L-forms shown by Panos suggested mutational changes. These were considered unrelated to L-formation by Landman and the result of mutation and selection during multiple subcultures. This conclusion seems to be an oversimplification.

There is a collection of indirect evidence for the role of wall-less bacteria in latency of infections and in sequelar diseases. Muschel theorizes on the mechanism of complement-induced lysis and L-formation. Immunological cross-reactivity was shown between the protoplast membranes of Group A streptococci and the sarcolemma of cardiac muscle (Friemer and Zabriski) and between L-forms and *Mycoplasma* (Lynn and Haller). These findings have important implications, yet the discussions that must have been generated cannot be found in the book.

The purpose of providing a current progress report of ongoing research has been achieved. Interested persons will welcome the collection of information into one well-bound volume.

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