GEOLOGIC FRAMEWORK OF ARIZONA AND SOUTHWESTERN UNITED STATES: A PROGRAM OF RESEARCH

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A systematic study of the geological evolution of Arizona and the southwestern United States is being undertaken in order to reach a more thorough understanding of the geological history of this area, and the relationships of various geological features and resources to this history. This review constitutes an announcement of the project and progress report to date.

In order to reach such an understanding, each geological system is being studied from many points of view. At present, studies of the Pennsylvanian, Mississippian, and Devonian systems are underway or are in various stages of completion, and several others will be started shortly. Ultimately, the systems of rocks will be further broken down and various sub-units will be equally thoroughly investigated. The present studies are designed primarily to give the framework upon which other detailed investigation can be built.

The pattern of study for each system varies with the problems involved, but among studies underway or to be started shortly are (1) original distribution of sediments, (2) present distribution of sediments, (3) isopach studies, (4) paleogeologic and paleogeographic relationships, (5) unconformities, (6) pre-formation geology, (7) post-formation geology, (8) facies distributions and environments of deposition, (9) patterns of vulcanism, (10) economic deposits and their relationships to the geological history and evolution of the area and (11) structural trends and patterns developed and older trends reactivated during the given period.

The first step in this development of the geological framework of the area has been to assemble all known and available data on the given period, especially measured sections, well logs and structural information. This step is followed by the location of critical areas for field studies and where further sections must be measured. In some cases, this involves the search for hithertofore unreported outcroppings of rocks of the given system.

Since many of the sections in Arizona are faulted or eroded, it becomes imperative that the beds of each period be accurately described and where necessary subdivided and zoned into formations and smaller units. Furthermore, the exact age of many of the beds within each system is not known. To accomplish this dating and zoning of beds, micro- and macro-paleontological studies and radioactive dating will be used to supplement the field mapping, insoluble residue, pollen and heavy mineral studies now starting on certain sections.

REFERENCES

The following references deal specifically with the framework project. Other M.S. and Ph.D. theses from the University of Arizona form important units in the overall study of Arizona geology.

Havenor, Kay C.: Pennsylvanian Framework of Sedimentation in Arizona, M.S. Thesis, University of Arizona, 1958. (Contains extensive bibliography.)

Thomas, George C.: The Framework of Mississippian Sedimentation in Arizona, M.S. Manuscript, University of Arizona (1958).

LaMone, David V.: The Devonian Stratigraphy of Cochise, Pima, Santa Cruz Counties, Arizona, and Hidalgo County, New Mexico, M.S. Manuscript, University of Arizona (1958).