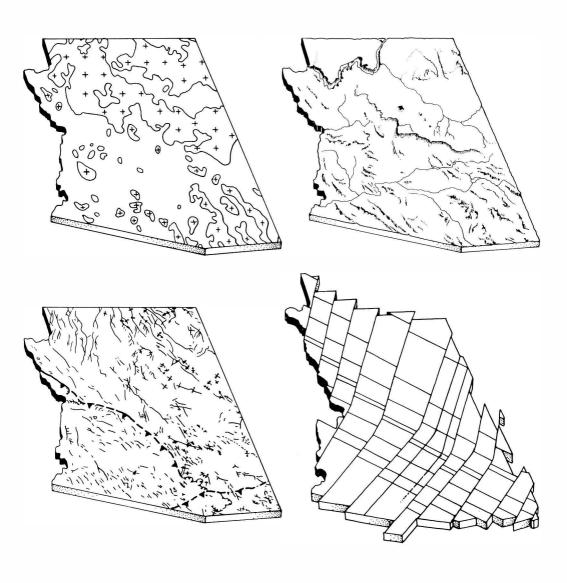
## ARIZONA GEOLOGICAL SOCIETY DIGEST VOLUME X

### **TECTONIC DIGEST**



TUCSON, ARIZONA

**MARCH 1976** 

## THIS PAGE INTENTIONALLY BLANK

#### ARIZONA GEOLOGICAL SOCIETY DIGEST

#### **VOLUME X**

# TECTONIC DIGEST

TUCSON, ARIZONA MARCH 1976

#### ARIZONA GEOLOGICAL SOCIETY

#### Information for Contributors to the Digest

The Digest is issued periodically by the Society as an informal bulletin intended to present technical papers and progress reports of research bearing on geological problems of Arizona in particular and the Southwest generally. The editor welcomes such papers as well as notes and news of geological and related activities within this broad framework.

Manuscripts for publication should meet the following requirements:

- 1. Manuscripts must be typewritten and double-spaced throughout (including abstracts, quotations, and reference citations).
- 2. Current "Digest" style should be followed in the preparation of the manuscript, with special attention being given to reference citations. Authors will be responsible for their own reference citations.
  - 3. Abstracts are required for all articles.
- 4. Drafted illustrations should be carefully prepared in waterproof black ink on drafting stock or Mylar. Lettering should be done with lettering guides or machines. Illustration titles should be typewritten. All illustrations should be of sufficient clarity to permit reduction to the standard Digest size.
  - 5. Photographs should be sharp glossy prints and kept to a minimum.
- 6. The original and one copy of the manuscript, including illustrations, should be submitted. Manuscripts and inquiries may be addressed to:

Digest Editor Arizona Geological Society P.O. Box 4585 Tucson, Arizona 85717

#### ARIZONA GEOLOGICAL SOCIETY

#### Officers for 1975-76

Charles P. Miller Pr	esident		
William E. Saegart Vice Pr	esident		
Maurice H. Brady Se	ecretary		
Jan C. Wilt Vice Se	cretary		
Judith P. Jenney Tr	easure		
Tom L. Heidrick Vice Tr	easure		
Councilors			
Albert J. Perry 1	975-78		
Robert C. Moore	975-78		
Denis L. Norton	974 <b>-</b> 77		
Frederick T. Graybeal	974 <del>-</del> 77		
H. Wesley Peirce 1	973-76		
W. W. Simmons	973-76		

#### Co-editors, Volume X Digest

Jan C. Wilt

Judith P. Jenney

#### Acknowledgments

The editors acknowledge M. E. (Spade) Cooley, J. David Lowell, and James D. Sell, who recognized the desirability of preparing such a volume and who initially solicited papers for it; Helen R. Hauck for invaluable editorial assistance; Douglas Peck of The University of Arizona Press, for helpful discussions and advice; and Robert P. Hale, teacher of Scientific Illustration, Department of General Biology, who provided cover art work.

Jan C. Wilt

Judith P. Jenney

#### CONTENTS

and New Mexico. By CARL B. RICHARDSON	1
Free-air Gravity Anomaly Map of Arizona. By J. S. SUMNER, J. S. SCHMIDT, and C. L. V. AIKEN	7
Yavapai Series—A Greenstone Belt. By C. A. ANDERSON, and LEON T. SILVER	13
Some Structures in Older Precambrian Rocks of the Clear Creek- Cremation Creek Area, Grand Canyon National Park, Arizona. By WILLIAM S. LINGLEY, JR	27
Elements of Paleozoic Tectonics in Arizona. By H. WESLEY PEIRCE	37
Late Devonian Tectonism in Southeastern Arizona. By DIETMAR SCHUMACHER, DONALD P. WITTER, SALLY J. MEADER, and STANLEY B. KEITH	59
Evidence for a Mesozoic Linear Tectonic Pattern in Southeastern Arizona. By S. R. TITLEY	71
Origin of the Red Hills-Piedmontite Hills Uplift. By EVANS B.  Mayo and GEORGE H. DAVIS	103
Gedar Pocket Canyon (Grand Wash)—Shebit—Gunlock Fault Complex, Northwestern Arizona and Southwestern Utah: Reinterpretation of the time of faulting. By EARL M. P. LOVEJOY	133
Laramide Tectonics from Paradise to Hells Gate, Southeastern Arizona. By HARALD DREWES	151
Tectonics of the Central Dragoon Mountains: A New Look. By STANLEY B. KEITH and LARRY F. BARRETT	1 69
Regional Tectonic Stress During the Laramide and Late Tertiary Intrusive Periods, Basin and Range Province, Arizona. By WILLIAM A. REHRIG and TOM L. HEIDRICK	205
The Age of Basin-Range Faulting in Arizona. By ANNE KRAMER LORING	229
Possible Arizona Faulting as Suggested by Mississippian Facies Analysis and Plate Tectonics—A Stratotectonic Approach. By WILLIAM J. PURVES	259
Internal Structure and Mechanism of Emplacement of a Small Gravity-Glide Sheet, Saguaro National Monument (East), Tucson, Arizona. By GEORGE H. DAVIS and ERIC G. FROST	287
Geology, Geochronology and Geochemistry of the Picacho Peak Area, Pinal County, Arizona. By M. SHAFIQULLAH, D. J. LYNCH, P. E. DAMON, and H. W. PEIRCE	305
Tectonic Significance of Basin and Range Thick Evaporite Deposits.  By H. WESLEY PEIRCE	325
The Black Mountain Fault. By JAMES P. VROMAN	341
Intrusive Fragmental Rocks Directly or Indirectly of Igneous Origin.  By EVANS B. MAYO	347
Plates 1, 2, 3, and 4 in Map Supplem	nent