

ARIZONA GEOLOGICAL SOCIETY

DIGEST

VOLUME III



TUCSON, ARIZONA

MARCH, 1960

ARIZONA GEOLOGICAL SOCIETY

DIGEST

VOLUME III



TUCSON, ARIZONA

MARCH, 1960

ARIZONA GEOLOGICAL SOCIETY

OFFICERS for 1959-60

Kenyon Richard, American Smelting and Refining Company.....President
L. A. Heindl, U. S. Geological Survey.....Vice President
Edgar J. McCullough, Jr. University of Arizona.....Secretary
G. A. Barber, Anaconda Exploration Company.....Treasurer

COUNCILORS

Reed Welch	American Smelting and Refining Company
John Journeay	Pima Mining Company
Robert E. Heineman	Consultant
Edwin A. Stone	Consultant
James L. Kelly	Anaconda Exploration Company
Willard C. Lacy	University of Arizona
Walter E. Heinrichs, Jr.	Heinrichs Geoexploration Company

EDITORIAL POLICY

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. Volume II of the Digest is combined with the Society's Southern Arizona Guidebook II, April, 1959.

John W. Anthony, Editor
Department of Geology
University of Arizona
Tucson

CONTENTS

Some Cretaceous-Tertiary Relationships in Southeastern Arizona and New Mexico. By Kenyon Richard and J. H. Courtright.....	1
Some Notes on Precambrian Structures in Arizona. By Donald E. Mathewson..	9
Topographic, Physiographic, and Structural Subdivisions of Arizona. By L. A. Heindl and J. F. Lance	12
Analysis of Gravel in Glen-San Juan Canyon Region Utah and Arizona. By Maurice E. Cooley.....	19
Cenozoic Geology of the Papago Indian Reservation, Pima, Maricopa, and Pinal Counties, Arizona. By L. A. Heindl.....	31
Geology of the Lower Bonita Creek Area. By L. A. Heindl.....	35
Ground Water in the Red Lake Area, Navajo Indian Reservation Arizona and New Mexico. By J. P. Akers.....	41
Geology of the Cameron and Leupp Quadrangles, Arizona. By J. P. Akers..	43
Current Assistance in Water-Development Program of Navajo Tribe, Arizona and New Mexico. By J. P. Akers.....	45
A New Occurrence of Allanite in the Quijotoa Mountains, Pima County, Arizona. By Sidney A. Williams.....	47
Some New Occurrences of Minerals of Arizona. By Richard Bideaux and Sidney A. Williams.....	53
A Dinosaur-Bearing Section of Cretaceous Rocks in the Empire Mountains, Pima County, Arizona. By Robert Moore and Halsey W. Miller.....	57
The Paleontological Literature of Arizona: A Review. By Halsey W. Miller, Jr.....	63
A Proposed Classification Scheme for Pyroclastic Rocks. By Joseph G. Wargo.....	71
Radiometric Determination of Potassium in Silicates. By Paul E. Damon, Carl E. Hedge, Omer J. Taylor and Carroll Halva.....	75
A Semi-Micro Analysis of Silicate Rocks for Ca, Mg, Fe, and Al Employing E. D. T. A. By Carroll Halva.....	81
Correlation of Volcanic Rocks in Santa Cruz County, Arizona. By Omer J. Taylor.....	87
Diabase at the Magma Mine, Superior, Arizona. By James D. Sell.....	93
A Note on the Probability of Assimilation of Rocks Intruded by the Central Arizona Diabase. By John W. Anthony.....	99
Techniques of Porosity, Permeability and Insoluble Residue Analysis of Carbonates and their Economic Significance. By Willard D. Pye.....	103
Preliminary Petrographic Study of Some Cretaceous Coals in Arizona. By Willard D. Pye.....	109
Utilization of Arid Lands Project. By J. W. Harshbarger and T. L. Smiley.	111
Origin of the Drainage of Southeastern Arizona. By Mark A. Melton.....	113

Geology of the Eastern Part of the Safford Basin, Graham County, Arizona. By Edward S. Davidson.....	123
Late Cenozoic Geology of the Lower Safford Valley--A Preliminary Report. By James I. Marlowe.....	127
Sedimentology and Stratigraphy of the Basin-Fill Sediments in the Safford Valley. By Jerry Harbour.....	131
Geology and Aquifer Characteristics of the Inner-Valley Alluvium in the Safford Valley, Arizona. By J. T. Hollander.....	133
Preliminary Report of the Stratigraphy of the III Ranch Beds, Graham County, Arizona. By Philip Seff.....	137
Paleontological Investigations in the III Ranch Area. By Paul A. Wood.....	141
Micropaleobotanical Research on the Late Tertiary Sediments of Arizona. By Jane Gray.....	145
Diatremes and a Ring Intrusion on the San Carlos Indian Reservation. By James I. Marlowe.....	151
Stratigraphic and Structural Position of Cenozoic Fossil Localities in Arizona. By John F. Lance.....	155
Current Status of Geologic Division Projects, U. S. Geologic Survey in Arizona.....	161
Reports Published and Work in Progress, U. S. Geological Survey, Ground Water Branch.....	165
Abstracts of Recent Geological and Related Work Accomplished or in Progress. By Graduate Students, University of Arizona.....	171
Thesis Work in Progress.....	178
Abstracts of Recent Theses in Arizona and Western New Mexico. By Graduate Students, University of Texas.....	181
Miscellaneous News.....	185