

OIL AND GAS FIELDS OF THE FOUR CORNERS AREA

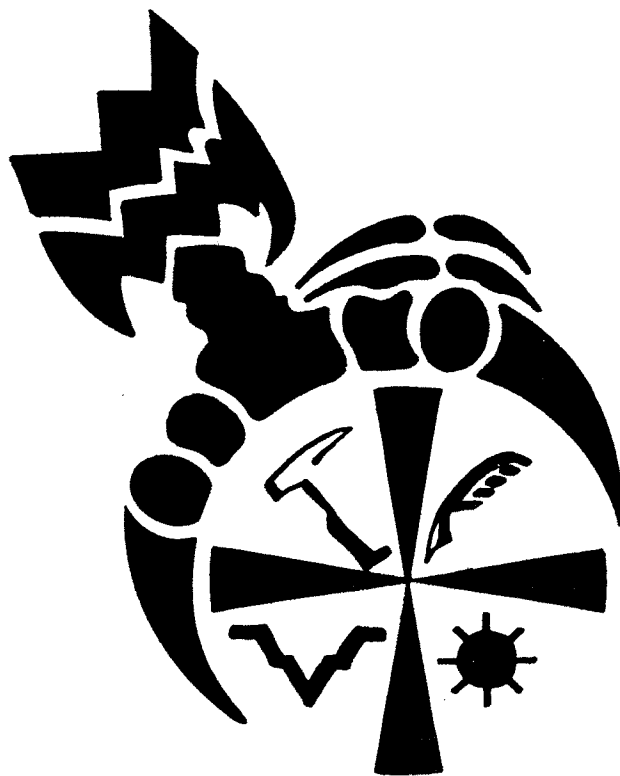
Volume II

JAMES E. FASSETT
Editor

NICK D. THOMAIDIS
Technical Editor

MARVIN L. MATHENY
Co-Editor and Vice-Chairman

RICHARD A. ULLRICH
General Chairman



FOUR CORNERS GEOLOGICAL SOCIETY

1978

Contents

INTRODUCTION

General Chairman's Message	xiii
Editor's Comments	xiv
Officers of Four Corners Geological Society	xvi

SPECIAL PAPERS

Carbon Dioxide Exploration	<i>Nick D. Thomaidis</i>	1
Las Milpas Gas Storage Unit	<i>Roy G. Sharrock</i>	5
Geothermal Energy Resources in New Mexico	<i>Phillip R. Grant, Jr.</i>	9

GENERAL PAPERS

A History of the Petroleum Industry in the Four Corners Area	<i>Marvin L. Matheny</i>	17
Oil and Gas Field Discovery Lists and Index Maps	<i>Marvin L. Matheny and Del A. Talley</i>	25
Northeast Arizona		25
Southwest Colorado		27
Northwest New Mexico		30
Southeast Utah		37
Stratigraphic Nomenclature Charts for San Juan and Paradox Basins	<i>C. M. Molenaar</i>	40
Stratigraphy and Oil and Gas Production:		
Arizona	<i>Nick D. Thomaidis</i>	42
Colorado (Southwest)	<i>Nick D. Thomaidis</i>	43
Nevada	<i>Nick D. Thomaidis</i>	45
New Mexico (Northwest)	<i>James E. Fassett, Emery C. Arnold, James M. Hill, Kay S. Hatton, Louie B. Martinez, and David A. Donaldson</i>	46
Utah (Southeast)	<i>Nick D. Thomaidis</i>	62

OIL AND GAS FIELD PAPERS

ARIZONA

Bitu Peak (Gas)	<i>Marvin L. Matheny</i>	65
Black Rock (Gas)	<i>Louis J. Bevacqua</i>	68
Boundary Butte, East (Oil and Gas)	<i>Steven S. Dunn</i>	70
Dineh-bi-Keyah (Oil)	<i>T. C. Danie</i>	73
Dry Mesa (Oil)	<i>Elliott A. Riggs</i>	77
Navajo Springs (Helium Gas)	<i>W. E. Allen</i>	80
Pinta Dome (Helium Gas)	<i>W. E. Allen</i>	85
Teec Nos Pos (Oil)	<i>Michael F. Conlon</i>	90
Tohache Wash Area (Helium Gas)	<i>Charles W. Spencer</i>	92
Toh Atin (Oil)	<i>Elliott A. Riggs</i>	94
Toh Atin, North (Gas)	<i>Elliott A. Riggs</i>	96
Twin Falls Creek (Gas)	<i>Elliott A. Riggs</i>	98
Walker Creek (Oil)	<i>Charles W. Spencer</i>	100

COLORADO

Alkali Gulch (Gas)	<i>Billy W. Squires</i>	103
Andy's Mesa (Gas)	<i>G. H. Halverson and J. D. Roe</i>	105

Aztec Wash (Oil)	(No paper)	
Barker Creek Paradox (Gas)	<i>Marvin L. Matheny</i>	201
Cache (Oil)	<i>John T. Wold</i>	108
Chipeta (Oil)	(No paper)	
Chromo (Oil)	<i>Walter J. Osterhoudt</i>	111
Chromo, East (Oil)	<i>Walter J. Osterhoudt</i>	113
Cinder Buttes (Gas)	(No paper)	
Desert Canyon (Oil)	<i>W. M. Freeman and R. L. Ghazal</i>	116
Dove Creek (Gas)	<i>Elliott A. Riggs</i>	118
Flodine Park (Oil)	<i>D. F. Mecham</i>	121
Goodman Point (Oil and Gas)	<i>Edward G. Mickel</i>	124
Hamilton Creek (Gas)	<i>Robert T. Young</i>	127
House Creek (Gas)	<i>R. B. Christy</i>	129
Ignacio Blanco Dakota (Gas)	<i>K. C. Bowman</i>	131
Ignacio Blanco Fruitland-Pictured Cliffs (Gas)	<i>Dana L. Craney</i>	134
Ignacio Blanco Mesaverde (Gas)	<i>K. C. Bowman</i>	137
Lisbon, Southeast (Gas)	<i>Lee Cargile</i>	140
Mancos River (Oil)	(No paper)	
Marble Wash (Oil)	<i>Harold H. Brown</i>	143
McClellan (Oil)	<i>Edward G. Mickel</i>	146
McElmo (CO ₂ , Oil, and Gas)	<i>Connie M. Krivanek</i>	148
Montrose Dome (Gas)	<i>Connie M. Krivanek</i>	152
Papoose Canyon (Oil and Gas)	<i>James F. Miesner</i>	154
Point Lookout (Gas)	(No paper)	
Price Gramps (Oil)	<i>William Donovan</i>	157
Red Mesa (Oil and Gas)	(No paper)	
Ramona (Oil)	(No paper)	
Ridgeway (Gas)	<i>Willson W. Bell</i>	160
Sierra (Gas)	(No paper)	
Slickrock (Gas)	<i>Bill F. Latch</i>	162
Towaoc (Oil)	<i>Charles W. Spencer</i>	164
Wild Steer Area (Unnamed Gas)	<i>Robert L. Askew</i>	168

NEVADA

Eagle Springs (Oil)	<i>Louis C. Bortz and D. Keith Murray</i>	171
Trap Spring (Oil)	<i>Herbert D. Duey</i>	174

NEW MEXICO

Akah Nez Devonian (Oil)	(No paper)	
Alamito Gallup (Oil)	(No paper)	
Alamo Farmington (Oil)	<i>W. F. Hoppe</i>	177
Albino Gallup (Gas)	(No paper)	
Amarillo Gallup (Oil)	<i>Thomas A. Dugan and Kurt Fagrelus</i>	179
Angel's Peak Gallup (Oil)	<i>Marvin L. and J. Paul Matheny</i>	181
Animas Chacra (Gas)	<i>W. F. Hoppe</i>	184
Aztec Farmington (Gas)	<i>Thomas A. Dugan and Al Kendrick</i>	186
Aztec Fruitland (Gas)	<i>T. Lynn Malone</i>	188
Aztec Fruitland, North (Gas)	<i>T. Lynn Malone and Marvin L. Matheny</i>	190
Aztec Pictured Cliffs (Gas)	<i>C. F. Brown</i>	192
Ballard Pictured Cliffs (Gas)	<i>C. F. Brown</i>	195
Barker Creek Dakota (Gas)	<i>Marvin L. Matheny</i>	198
Barker Creek Paradox (Gas)	<i>Marvin L. Matheny</i>	201

Basin Dakota (Gas)	<i>W. F. Hoppe</i>	204
Beautiful Mountain Mississippian (Oil)	<i>Harold H. Brown</i>	207
Bisti Carson Unit Gallup (Oil)	<i>Carl O. Collins</i>	209
Bisti Lower Gallup (Oil)	<i>Floyd F. Sabins</i>	213
Blackeye Dakota (Oil)	<i>Bruce A. Black</i>	216
Blackeye Mesaverde (Oil)	<i>Bruce A. Black</i>	218
Blanco Fruitland (Gas)	<i>T. Lynn Malone</i>	220
Blanco Mesaverde (Gas)	<i>R. L. Pritchard</i>	222
Blanco Pictured Cliffs (Gas)	<i>C. F. Brown</i>	225
Blanco Pictured Cliffs, East (Gas)	<i>C. F. Brown</i>	228
Blanco Pictured Cliffs, South (Gas)	<i>C. F. Brown</i>	230
Blanco Tocito, South (Oil)	<i>James E. Fassett and Russell Jentgen</i>	233
Bloomfield Chacra (Gas)	<i>W. F. Hoppe</i>	241
Bloomfield Farmington (Oil)	<i>Elliott A. Riggs</i>	243
Blue Hill Paradox (Gas)	<i>Elliott A. Riggs</i>	245
Boulder Mancos (Oil)	<i>C. N. Needham</i>	248
BS Mesa Gallup (Gas)	<i>Marvin L. and J. Paul Matheny</i>	251
Buena Suerte Pennsylvanian (Oil)	<i>Harold H. Brown</i>	254
Campo Gallup (Gas)	(No paper)	
Cha Cha Gallup (Oil)	<i>Marvin L. and J. Paul Matheny</i>	256
Chaco Wash Mesaverde (Oil)	<i>Bruce A. Black</i>	260
Chacon Dakota (Oil)	<i>Laura J. Beach and David M. Thomas, Jr.</i>	263
Choza Mesa Pictured Cliffs (Gas)	<i>C. F. Brown</i>	266
Cone Paradox (Oil)	<i>Kurt Fagrelus</i>	268
Conner Fruitland (Gas)	<i>T. Lynn Malone</i>	270
Cottonwood Fruitland (Gas)	(No paper)	
Crouch Mesa Fruitland (Gas)	(No paper)	
Crouch Mesa Mesaverde (Gas)	<i>R. L. Pritchard</i>	272
Cuervo Gallup (Oil)	(No paper)	
Cuervo Mesaverde (Oil)	<i>Thomas A. Dugan and Kurt Fagrelus</i>	274
Devils Fork Gallup (Oil)	<i>Steven S. Dunn</i>	276
Devils Fork Mesaverde (Oil)	<i>Steven S. Dunn</i>	279
Dufers Point Gallup-Dakota (Oil)	<i>Steven S. Dunn</i>	282
Eagle Mesa Entrada (Oil)	<i>John P. Campbell</i>	285
Escrito Gallup (Oil, Associated)	<i>Val R. Reese</i>	287
Five Lakes Dakota (Oil)	<i>Val R. Reese</i>	290
Flora Vista Fruitland (Gas)	<i>T. Lynn Malone</i>	292
Flora Vista Gallup (Gas)	<i>James M. Hornbeck</i>	294
Flora Vista Mesaverde (Gas)	<i>R. L. Pritchard</i>	298
Four Corners Paradox (Oil)	<i>John E. Bircher</i>	300
Franciscan Lake Mesaverde (Oil)	<i>Claude C. Kennedy</i>	304
Fulcher Kutz Pictured Cliffs (Gas)	<i>C. F. Brown</i>	307
Gallegos Farmington, South (Gas)	<i>Thomas A. Dugan and Kurt Fagrelus</i>	310
Gallegos Fruitland (Gas)	<i>P. S. Hopson</i>	312
Gallegos Fruitland, South (Gas)	<i>John E. Bircher</i>	314
Gallegos Gallup (Oil)	<i>Steven S. Dunn</i>	317
Gavilan Pictured Cliffs (Gas)	<i>William P. Conyers</i>	320
Gobernador Pictured Cliffs (Gas)	<i>Marvin L. Matheny</i>	323
Gonzales Mesaverde (Gas)	<i>R. L. Pritchard</i>	325
Harper Hill Fruitland-Pictured Cliffs (Gas)	<i>Thomas A. Dugan and Kurt Fagrelus</i>	327
Harris Mesa Chacra (Gas)	<i>W. F. Hoppe</i>	329
Hogback Dakota (Oil)	<i>Jim Maynard</i>	331
Hogback Mississippian (Oil)	<i>Jim Maynard</i>	333
Hogback Pennsylvanian (Oil)	<i>Jim Maynard</i>	334

Horseshoe Gallup (Oil)	<i>W. D. McEachin and R. M. Royce</i>	335
Hospah Dakota (Oil)	<i>Richard M. Luce</i>	338
Hospah Lower Sand, South (Oil)	<i>Richard M. Luce</i>	341
Hospah Upper Sand (Oil)	<i>John E. Bircher</i>	344
Hospah Upper Sand, South (Oil)	<i>Richard M. Luce</i>	347
Huerfano Pictured Cliffs (Gas)	<i>Marvin L. Matheny</i>	350
Jasis Canyon Fruitland (Gas)	<i>David P. Hamilton</i>	353
Jewet Valley Gallup (Oil)	(No paper)	
Knickerbocker Buttes Gallup (Oil)	<i>R. L. Pritchard</i>	355
Kutz Farmington (Gas)	<i>T. Lynn Malone</i>	357
Kutz Fruitland (Gas)	<i>T. Lynn Malone</i>	359
Kutz Fruitland, West (Gas)	<i>Michael F. Conlon</i>	361
Kutz Gallup (Oil)	<i>Gene M. Stevenson and Marvin L. Matheny</i>	363
Kutz Pictured Cliffs, West (Gas)	<i>C. F. Brown</i>	366
La Jara Fruitland (Gas)	<i>T. Lynn Malone</i>	369
La Plata Gallup (Oil)	<i>Albert R. Greer</i>	371
Largo Chacra (Gas)	<i>W. F. Hoppe</i>	374
Largo Gallup (Gas)	<i>James E. Fassett and Russell Jentgen</i>	376
Lindrith Gallup (Gas)	(No paper)	
Lindrith Gallup-Dakota, South (Oil)	(No paper)	
Lindrith Gallup-Dakota, West (Oil)	<i>R. Tucker Attebury</i>	381
Lone Pine Dakota "A" (Gas)	<i>Dennis G. Storhaug</i>	385
Lone Pine Dakota "D" (Oil)	<i>Dennis G. Storhaug</i>	387
Los Pinos Fruitland, North (Oil)	<i>K. C. Bowman</i>	390
Los Pinos Fruitland, South (Gas)	<i>K. C. Bowman</i>	393
Lybrook Gallup (Oil)	<i>Val R. Reese</i>	395
Many Rocks Gallup (Oil)	<i>Marvin L. Matheny and Curtis J. Little</i>	398
Many Rocks Gallup, North (Oil)	<i>Marvin L. Matheny and Curtis J. Little</i>	403
Marcelina Dakota (Oil)	<i>Mark E. Weidler</i>	406
Marcelina Gallup (Oil)	(No paper)	
Meadows Gallup (Oil)	<i>Kurt Fagrelus</i>	408
Media Entrada (Oil)	<i>Val R. Reese</i>	410
Media Entrada, Southwest (Oil)	<i>Val R. Reese</i>	413
Media Gallup (Oil)	<i>Val R. Reese</i>	416
Mesa Gallup (Oil)	<i>Marvin L. Matheny and Curtis J. Little</i>	418
Middle Canyon Dakota (Oil)	<i>Gene M. Stevenson</i>	421
Miguel Creek Gallup (Oil)	<i>Mark E. Weidler</i>	423
Mt. Nebo Fruitland (Gas)	<i>Jim Maynard</i>	425
Nageezi Gallup (Oil)	<i>Harold H. Brown</i>	427
Navajo City Chacra (Gas)	(No paper)	
Nenahnezad Mesaverde (Oil)	(No paper)	
Nipp Pictured Cliffs (Gas)	<i>Jim L. Jacobs</i>	429
Ojito Dakota (Oil)	<i>James K. Folk</i>	431
Ojito Gallup (Oil)	<i>James K. Folk and Marvin L. Matheny</i>	433
Ojo Encino Entrada (Oil)	<i>Alan C. Bryant</i>	435
Ojo Fruitland-Pictured Cliffs (Gas)	<i>Kurt Fagrelus and Jim L. Jacobs</i>	437
Ojo Gallup (Gas)	<i>Thomas A. Dugan and Kurt Fagrelus</i>	439
Oswell Farmington (Oil)	<i>Elliott A. Riggs</i>	441
Otero Chacra (Gas)	<i>W. F. Hoppe</i>	442
Otero Gallup (Oil)	<i>Harold H. Brown</i>	444
Otero Pictured Cliffs (Gas) (See Ballard Pictured Cliffs)	<i>Jay Harris</i>	195
Otero Point Lookout (Oil)	<i>R. L. Pritchard</i>	447
Otero Sanastee (Oil)	(No paper)	
Pajarito Pennsylvanian (Oil)	<i>Steven S. Dunn</i>	449

Papers Wash Entrada (Oil)	<i>Alan C. Bryant</i>	451
Parlay Mesaverde (Oil)	<i>Gordon H. Gray</i>	453
Pinon Fruitland (Gas)	<i>Jim Maynard</i>	456
Pinon Fruitland, North (Gas)	<i>Michael F. Conlon</i>	458
Pinon Gallup (Oil)	<i>Marvin L. and J. Paul Matheny</i>	460
Potwin Pictured Cliffs (Gas)	<i>Jim L. Jacobs and Kurt Fagrelus</i>	462
Puerto Chiquito Mancos, East (Oil)	<i>Albert R. Greer</i>	464
Puerto Chiquito Mancos, West (Oil)	<i>Albert R. Greer</i>	468
Pump Mesa Fruitland (Gas)	<i>G. Babcock</i>	472
Rattlesnake Dakota (Oil)	(No paper)	
Rattlesnake Gallup (Oil)	(No paper)	
Rattlesnake Mississippian (Gas)	(No paper)	
Rattlesnake Pennsylvanian BCD (Oil)	(No paper)	
Red Mountain Mesaverde (Oil)	<i>Bruce A. Black</i>	474
Rosa Gallup (Gas)	(No paper)	
Rusty Chacra (Gas)	<i>Claude C. Kennedy</i>	477
Rusty Gallup (Gas)	<i>Claude C. Kennedy</i>	477
Rusty Menefee (Oil)	<i>Claude C. Kennedy</i>	477
Salt Creek Dakota (Oil)	<i>Jim L. Jacobs and Kurt Fagrelus</i>	480
San Luis Mesaverde (Oil)	(No paper)	
San Luis Mesaverde, South (Oil)	(No paper)	
Schmitz Torreon-Puerco (Gas)	<i>C. N. Needham</i>	482
Sedro Canyon Fruitland (Gas)	(No paper)	
Seven Lakes Menefee (Oil)	<i>Bruce A. Black</i>	486
Shiprock Dakota, North (Oil)	<i>Thomas A. Dugan and Kurt Fagrelus</i>	488
Shiprock Gallup (Oil)	(No paper)	
Shiprock Gallup, North (Gas)	<i>Thomas A. Dugan and Kurt Fagrelus</i>	490
Shiprock Pennsylvanian, North (Gas)	(No paper)	
Simpson Gallup (Oil)	<i>Marvin L. and J. Paul Matheny</i>	492
Sleeper Pictured Cliffs (Oil)	<i>Marvin L. Matheny</i>	495
Slick Rock Dakota (Oil)	<i>R. F. Garvin</i>	497
Snake Eyes Dakota (Gas)	<i>Alan C. Bryant</i>	500
Snake Eyes Entrada (Oil)	<i>Alan C. Bryant</i>	500
Stoney Butte Dakota (Oil)	<i>Robert E. Lauth</i>	503
Stoney Butte Mesaverde (Oil)	<i>Robert E. Lauth</i>	505
Straight Canyon Dakota (Gas)	(No paper)	
Table Mesa Dakota (Oil)	<i>Robert E. Lauth</i>	507
Table Mesa Mississippian (Gas)	(No paper)	
Table Mesa Pennsylvanian "C" (Oil)	(No paper)	
Tapacito Gallup (Oil)	<i>James E. Fassett and Russell Jentgen</i>	510
Tapacito Pictured Cliffs (Gas)	<i>C. F. Brown</i>	516
Tocito Dome Mississippian, North (Gas)	<i>Elliott A. Riggs</i>	519
Tocito Dome Pennsylvanian "D" (Oil)	<i>Charles W. Spencer</i>	522
Tocito Dome Pennsylvanian, North (Gas)	<i>Charles W. Spencer</i>	528
Tom Devonian (Oil)	(No paper)	
Torreon Mesaverde (Oil)	<i>R. L. Pritchard</i>	532
Torreon Mesaverde (Gas)	<i>R. L. Pritchard</i>	534
Totah Gallup (Oil)	<i>Marvin L. and J. Paul Matheny</i>	535
Twin Mounds Mesaverde (Gas)	<i>David P. Hamilton</i>	538
Twin Mounds Pictured Cliffs (Gas)	<i>David P. Hamilton</i>	540
Ute Dome Dakota (Gas)	<i>Margaret A. Tezak</i>	543
Ute Dome Paradox (Gas)	<i>Margaret A. Tezak</i>	546
Venado Mesaverde (Oil)	<i>R. L. Pritchard</i>	548
Verde Gallup (Oil)	<i>Elliott A. Riggs</i>	550

Wagonmound Dakota-Morrison (Gas)	<i>B. J. Brooks and W. R. Clark</i>	553
Walker Dome Mancos (Oil)	<i>Claude C. Kennedy</i>	556
Waterflow Gallup, South (Oil)	(No paper)	
Waw Fruitland-Pictured Cliffs (Gas)	<i>Kurt Fagrelus</i>	558
Wildhorse Dakota (Oil)	<i>J. Paul Matheny</i>	561
Wildhorse Gallup (Gas)	<i>Marvin L. and J. Paul Matheny</i>	564
Wyper Farmington (Oil)	(No paper)	

UTAH

Akah (Gas)	<i>Elliott A. Riggs</i>	569
Alkali Canyon (Oil)	<i>Elliott A. Riggs</i>	572
Anderson Junction (Oil)	<i>William W. Whitley</i>	575
Aneth (Aneth Unit) (Oil)	<i>Paul E. Babcock</i>	577
Aneth (McElmo Creek Unit) (Oil)	<i>Paul E. Babcock</i>	580
Aneth (Ratherford Unit) (Oil)	<i>W. M. Freeman and R. L. Ghazal</i>	584
Aneth (White Mesa) (Oil)	<i>Dennis Irwin</i>	587
Anido Creek (Oil)	<i>Robert E. Lauth</i>	591
Bartlett Flat (Oil)	(No paper)	
Bennett's Oil Field (Oil Seep)	<i>Elliott A. Riggs</i>	594
Big Flat (Oil)	<i>Kenneth T. Smith</i>	596
Big Indian Pennsylvanian (Oil)	<i>Bill F. Latch</i>	599
Big Indian Mississippian (Oil)	<i>Bill F. Latch</i>	602
Blaze Canyon (Oil)	(No paper)	
Bluff (Oil)	<i>Jock A. Campbell</i>	605
Bluff Bench (Oil)	<i>Jock A. Campbell</i>	610
Boundary Butte Coconino (Oil)	<i>W. D. McEachin and R. M. Royce</i>	615
Boundary Butte Paradox (Gas)	<i>W. D. McEachin and R. M. Royce</i>	618
Broken Hills (Oil)	<i>Edward G. Mickel</i>	621
Cane Creek (Oil)	<i>Kenneth T. Smith</i>	624
Chinle Wash (Gas)	<i>Steven S. Dunn</i>	627
Cleft (Oil)	<i>Charles W. Spencer</i>	630
Coal Bed Canyon (Gas)	<i>P. S. Hopson</i>	632
Cottonwood Creek (Oil)	<i>Jock A. Campbell</i>	634
Cowboy (Oil)	<i>Edward G. Mickel</i>	636
Desert Creek (Oil)	<i>Robert E. Lauth</i>	639
Gothic Mesa (Oil)	<i>Fred S. Reid and Gene M. Stevenson</i>	642
Grayson (Oil)	<i>Dennis Irwin</i>	646
Hatch (Oil)	<i>Edward G. Mickel</i>	648
Hook and Ladder (Gas)	<i>Kenneth T. Smith</i>	651
Ismay (Oil)	<i>D. F. Mecham</i>	654
Ismay, South (Oil)	<i>D. F. Mecham</i>	658
Lime Ridge (Gas)	<i>Elliott A. Riggs</i>	660
Lisbon (Oil)	<i>Charles A. Clark</i>	662
Little Grand Wash Fault-Crystal Geyser Area (CO ₂ Gas)	<i>James L. Baer and Jock A. Campbell</i>	666
Little Valley (Gas)	<i>Bill F. Latch</i>	670
Lone Mountain Creek (Oil)	<i>Elliott A. Riggs</i>	673
Long Canyon (Oil)	<i>Kenneth T. Smith</i>	676
McElmo Mesa (Oil)	<i>Edward G. Mickel</i>	679
Mexican Hat (Oil)	<i>Robert E. Lauth</i>	682
Patterson (Oil)	<i>Connie M. Krivanek</i>	688
Piute Knoll (Gas)	<i>Edward G. Mickel</i>	691
Recapture Creek (Oil)	(No paper)	
Rockwell Flat (Oil)	<i>Edward G. Mickel</i>	694

Salt Wash (Oil)	<i>Jim Norton</i>	697
Shafer Canyon (Oil)	<i>Kenneth T. Smith</i>	700
Tohonadla (Oil)	<i>Jim Norton</i>	703
Turner Bluff (Oil)	<i>Edward G. Mickel</i>	706
Upper Valley (Oil)	<i>George Sharp</i>	709
Virgin (Oil)	<i>Patrick L. Driscoll</i>	712
White Belly Wash (Gas)	<i>Edward G. Mickel</i>	716
Wilson Canyon (Oil)	<i>Edward G. Mickel</i>	719
Yellow Rock (Oil)	<i>Edward G. Mickel</i>	722

INDEX

Index by Authors		725
------------------------	--	-----