HYDRAULIC MINING NEAR MILL CREEK, OKLAHOMA

High-purity silica sand, used primarily for glass manufacture, has been produced near Mill Creek, Johnston County, for about 60 years. In Pennsylvania Glass Sand Corp.'s quarry, SW¼ sec. 14, T. 1 S., R. 4 E., material from an approximately 50-foot-thick, loosely consolidated sandstone member of the Oil Creek Formation (Middle Ordovician) is removed hydraulically for processing (cover photograph).

Widely spaced blast holes are drilled into a 30- to 90-foot section of sandstone. After the blasting program is completed and the overburden material removed, a device called a monitor directs a stream of water, up to 100 feet long, through a 1½-inch nozzle toward the base of the quarry face. This process creates a slurry of sand and water near the bottom of the pit wall. The slurry is channelized to a sump pump, where the material is transported by pipe (foreground) to a primary screening plant. The minus-¼-inch material is then pumped to the main processing plant, where the sand is washed, dewatered, and screened.

The sand is sold as melting sand in glass-making, as foundry sand, as a source of silica in making sodium silicate, as an abrasive, and (or) as inert filler. About 69 percent of the washed product is medium to fine sand (½ to ⅛ mm), and 26 percent is very fine sand (⅛ to ¼₁₆ mm).

—Kenneth V. Luza
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Index—pages 135-150

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Zimbrick, G. D., see Sutherland, P. K., Grayson, R. C., and Zimbrick, G. D.

INDEX

(Numbers refer to entries in bibliography)

age dating, radiocarbon: Hominy Creek alluvium, 105; Little Caney River alluvium, 106

ANADARKO BASIN:
dee wells, 138, 159, 174, 200, 235
geoseismic stratigraphic model, 80

135
geothermal gradients, 32
Landsat exploration, 65
Marchand sands, 14
Mills Ranch complex, 138
Permian red beds and evaporites, 140
petroleum, 12, 38, 58, 80, 138, 174, 186, 187, 189, 190, 200, 235, 247, 253
salt deposits, 142
sedimentology, 14, 21, 80, 81, 142, 189, 208, 209, 247, 253, 254, 255
structure and tectonics, 32, 65, 81, 82, 84, 114, 142, 157, 249, 253, 254
Watonga-Chickasha trend, 38

annual reports: Oklahoma Department of Mines, 69th, 195; Oklahoma Geological Survey,
July 1, 1977–June 30, 1978, 175

ARBuckle MOUNTAINS:
algae, 252
Arbuckle Anticline, 20, 21, 81, 246
Arbuckle aquifer, 66
Belton Anticline, 20, 21, 131
brecias, 246
carbonate mounds, Kindblade Formation, 214
Carlton Rhyolite, 87, 131, 267
conodonts, Clarita Formation, 15
Franks-Clarita Fault Zone, 10, 20
Hunton Anticline, 20, 21
Mill Creek–Blue River Fault Zone, 20
Mill Creek Syncline, 20, 21
Reagan Fault Zone, 20, 272
sedimentology, 20, 81, 83, 167, 214, 217, 218
source of Quanah Granite, 2
structure and tectonics, 20, 21, 66, 131, 178, 246, 267, 272
Sulphur Fault Zone and Syncline, 20, 21, 131
Tishomingo Anticline, 20, 21, 81, 131
Washita Valley Fault Zone and Syncline, 20, 21, 131, 178, 272
Ardmore Basin: geothermal gradients, 32; petroleum, 191; structure and tectonics, 32, 131, 249

ARKOMA BASIN:
Backbone Anticline and Fault, 4, 47
Bokoshe Syncline, 47
bryozoans, 171
Cavanal Syncline, 47
Choctaw Fault, 47
Clarita Anticline and Fault, 10
coal, 4, 42, 47, 55, 77, 78
Coal Creek Synclines, 4, 47
heavy oils, 61
James Fork Syncline, 4
Milton Anticline, 47
paleogeography, 119
petroleum, 12, 174, 241
Phillips Fault, 10
sedimentology, 4, 10, 47, 55, 119, 172
Spiro Anticline, 4, 47
structure and tectonics, 4, 10, 47, 55, 119, 131, 172

BIBLIOGRAPHIES:
color-pattern preservation in fossils, 123
guidebooks, 86
nontechnical geological publications, 196
Oklahoma geology, 1977, 107
Oklahoma Permian vertebrates, 231

**Cambrian:**

Arbuckle Group, 21, 66, 81, 82, 83, 84, 122, 131, 186, 211, 246; Butterfly Formation, 81; Fort Sill Formation, 81, 211; Royer Dolomite, 81

Carlton Rhyolite, 87, 131, 267

Glen Mountain layered complex, 91

Meers Quartzite, 101

Raggedy Mountain Gabbro Group, 88, 91, 92, 94

Signal Mountain Formation, 81

Timbered Hills Group, 81, 122, 131, 246; Honey Creek Formation, 81, 131; Reagan Sandstone, 81, 131

trilobites, 248

Wichita Granite Group, 2, 87, 88, 89, 90, 91, 92, 93, 94, 101; Lugert Granite, 89, 93; Mount Scott Granite, 88, 90, 91, 101; Quanah Granite, 2, 91, 92; Reformatory Granite, 89, 93

carbonate rocks, petrography, general, 219

Carboniferous: Ouachita turbidites, 181

**Coal:**

analyses, 47, 76, 77, 78

classification by rank, 76

col beds: Baldwin coal, 26; Cavanal coal, 42, 47, 77, 78; Croweburg coal, 42, 77, 78; Dawson coal, 77, 78; Eram coal, 77; Iron Post coal, 42, 77, 78; McAlester coals, 42, 47, 55, 77, 78; Mineral coal, 42, 77, 78; Morris coal, 77; Rowe coal, 42, 77, 78; Secor coals, 42, 77, 78; Stigler coals, 4, 47, 55, 77, 78; Weir-Pittsburg coals, 42, 77, 78; Witteville coals, 77, 78

evolution and development, 12, 40, 42, 78, 212

general, 40, 41, 42

methane recovery, 162

Oklahoma Geological Survey programs, 12, 175

power-generating plants, 13

producers, 4, 12, 40, 41, 78

projected power plants, 212

regulations, 13

reserves and resources, 4, 42, 47, 78

restrictions on burning, 13

spoil-bank study, Okmulgee County, 102

statistics, 11, 13, 41, 49, 75, 174

technology, 40, 78

transportation, 13, 43

**Copper:** mineralization, 46; Wellington Formation, 46

**Counties:**

all counties: ground-water levels, 96; mineral production, 11, 12, 13, 195; petroleum and natural gas, 11, 12, 13, 117, 199

all eastern counties: ground-water quality, 121

Adair: brachiopods, 8; Morrowan rocks, 278; Pitkin Formation, 39; Trace Creek Shale, 279

Atoka: Antlers aquifer, 51, 118

Bekham: Elk City Sandstone, 67; gypsum, 139; Mills Ranch complex, 138; petroleum development, 58, 159; soils, 211

Blaine: Blaine Formation, 125; gypsum, 139, 206, 268; Watonga-Chickasha trend, 38

Bryan: Antlers aquifer, 51, 118; Bokchito Formation, 120, 130; Denison Dam Quadrangle, general geology, 23; general, 131; Washita Group, 224

Caddo: gypsum, 139; Marchand sands, Binger field, 14; Morrow-Springer exploration, 190; soils, 261

Canadian: geoseismic stratigraphic model, 80; Morrow-Springer exploration, 190; Oklahoma City Uplift, 157

Carter: Antlers aquifer, 118; gastropods, 165; Healdton Field, 84; lithium, 44; soils, 261

137
Cherokee: brachiopods, 8; Burlington Shelf, 163; Morrowan rocks, 278
Choctaw: Antlers aquifer, 51, 118; Bokchito Formation, 130; Washita Group, 224
Cimarron: Dakota Group, 67
Cleveland: Oklahoma City Uplift, 157
Coal: Atoka Formation, 10; coal, 78
Comanche: Cambrian granites, 91; gypsum, 139; soils, 261
Cotton: soils, 261
Craig: coal, 12, 75, 78
Creek: Vamoosa aquifer, 53
Custer: general, 67; gypsum, 139
Dewey: Permian formations, 67
Ellis: Permian formations, 67; South Gage Field, 253, 254, 255
Garvin: Northwest Butterfly Field, 21; soils, 261
Grady: Morrow-Springer exploration, 190; Oklahoma City Uplift, 157; soils, 261
Grant: copper, 46
Greer: gypsum, 139
Harmon: gypsum, 139; soils, 261
Harper: gypsum, 139; iodine, 45; Pleistocene Lake Buffalo, 225
Haskell: coal, 12, 75, 78
Jackson: gypsum, 139; soils, 261
Jefferson: fossil fish, 277; soils, 261
Johnston: Antlers aquifer, 118; soils, 261
Kay: carbon-black production, 72
Kiowa: algae, 252; soils, 261
Latimer: coal, 75, 78
Le Flore: coal, 4, 12, 47, 55, 75, 76, 78
Lincoln: Hunton Group, 126, 127, 128; Misener Sandstone, 155; Vamoosa aquifer, 53
Logan: Cleveland sand reservoir, 160, 161; Hunton Group, 126, 127, 128
Love: Antlers aquifer, 51, 118; soils, 261
McCurtain: Antlers aquifer, 51, 118; Paluxy Formation, 29; Washita Group, 224
Major: gypsum, 139
Marshall: Antlers aquifer, 51, 118; areal geology, 129; Cretaceous, 129; Denison Dam Quadrangle, general geology, 23; petroleum and natural gas, 129; soils, 261; subsurface geology, 178
Murray: algae, 252; soils, 261; Southwest Davis Field, 272
Muskogee: coal, 12, 75, 78; crinoids, 238, 240
Noble: Cherokee Group rocks, 28; lithium, 44; South Ceres Field, 54
Nowata: coal, 75, 78; Delaware-Childers Field, 25
Okfuskee: Vamoosa aquifer, 53
Oklahoma: Oklahoma City Field, 82, 84, 109; Oklahoma City Uplift, 157
Okmulgee: coal, 12, 75, 76, 78; nautiloids, 259; spoil-bank study, 102
Osage: crinoids, 239; North Burbank Field, 6, 30, 97, 154, 220, 256; North Stanley Field, 30, 50; pollens, 105; Vamoosa aquifer, 53
Ottawa: tripoli, 3, 207; zinc-mine water, 202
Pawnee: Vamoosa aquifer, 53
Payne: Hunton Group, 126, 127, 128; Misener Sandstone, 155; Vamoosa aquifer, 53
Pittsburg: coal, 12, 75, 78
Pontotoc: Atoka Formation, 10; blastoids, 148
Pottawatomie: Vamoosa aquifer, 53
Pushmataha: Antlers aquifer, 118
Roger Mills: Cloud Chief Formation, 67; Reydon East Field, 187; soils, 261
Rogers: coal, 40, 41, 42, 75, 78
Seminole: Vamoosa aquifer, 53
Sequoyah: brachiopods, 8; Morrowan rocks, 278
Stephens: North Alma Field, 30; soils, 261; Taco Field, 275
Tillman: fossil fish, 277; soils, 261
Tulsa: coal, 78; flood-plain management, Bixby, 48
Wagoner: coal, 75, 78; crinoid, 240
Washington: crinoids, 239; pollens, 105
Washita: Elk City Sandstone, 67; gypsum, 139; soils, 261
Woods: gypsum, 139
Woodward: gypsum, 139; iodine, 45

CRETACEOUS:
Comanchean (Lower Cretaceous) Series:
  Dakota Group, 67
  Fredericksburg Group:
    Goodland Formation, 23, 129, 131
    Walnut Formation, 23, 129, 131
  Trinity Group:
    Antlers Formation, 23, 29, 51, 118, 129, 131, 269
    Baum Limestone, 129
    Paluxy Formation, 29
  Washita Group:
    Bennington Formation, 131
    Bokchito Formation, 23, 119, 120, 129, 130, 131, 143: Denton Clay Member, 23, 120, 129, 130, 224; McNutt Limestone Member, 120, 129, 130, 131; Pawpaw Limestone Member, 23, 120, 129, 130, 131, 224; Soper Limestone Member, 120, 129, 130, 131; Weno Clay Member, 23, 120, 129, 130, 224
    Caddo Formation, 129, 131
    Duck Creek Formation, 23, 129, 224
    Fort Worth Formation, 23, 129, 224
    Grayson Formation, 23, 131, 224
    Kiamichi Formation, 23, 129, 131, 224
    Kiowa Shale, 67
    Main Street Formation, 23, 224
Gulfian (Upper Cretaceous) Series: Eagle Ford Formation, 131, 143; Woodbine Formation, 131

DATA SYSTEMS: General Information Processing System (GIPSY), 27; Petroleum Data System (PDS), 188

DEVONIAN:
Arkansas Novaculite, 124, 149
Huntsville Group, 74, 114, 127, 128, 131: Haragan Formation, 74, 127
oil production from shales, 162
Ouachita and Ozark areas, Arkansas, 26
Woodford Formation, 131, 143, 155

EQUSTRUES: earthquake-recording network, 164; El Reno, 1952, 157; general, 142, 180, 236, 237, 274; Modified Mercalli intensity attenuation, 9

ENVIRONMENTAL GEOLOGY:
diversion of fluid from treated wells, 154
effects of quarrying, 13
flood-disaster protection, 132
flooding: Bixby, 48; Cimarron River Valley, 18; flood deposits, Arkansas River, 234; flood-disaster protection, 132; flood-peak records, 132; storm-water management, 132
flood-plain management, 48
land use: Red River Basin, 261; surface-mined lands, 170; waste-powered power plant, 212
mined and quarried lands, reclamation, 102, 170, 195, 268
mine disasters, 195
mine-dump erosion study, 102
mining regulations, 12, 13, 170, 195
nuclear-facilities siting, 168
oil and gas conservation, 34
Oklahoma Geological Survey programs, 175
restrictions on coal burning, 13
salt pollution: Arkansas River Valley, 141; central Oklahoma, 270
soil expansion and contraction, Cimarron River Valley, 18
storm-water management, 132
waste disposal: industrial wastes, 143, 169; radioactive wastes, 142
waste-powered power plant, 212
water quality: Antlers aquifer, 51, 118; Arbuckle aquifer, 66; Arkansas River Valley, 141;
Boone aquifer, 150; Cimarron River Valley, 18; eastern Oklahoma, ground water,
121; Washita River, 173, 183; zinc-mine water, 202, 203

**Geochemistry:**
alteration of red beds over petroleum deposits, 68
atmospheric carbonyl sulfide concentration, 176
clay analyses in soils, 216
carbon analyses, 47, 76, 77, 78
copper mineralization, 46
fluid analyses for treated wells, 154
goethite and magnetite, 32
heavy oils, 60, 61
hydrothermal fresh-water carbonates, 257
ion-microprobe study of galena, 22
isotope analysis, Tri-State galena, 22, 229
kerogen analyses, 116
Keyes chondrite, $^{53}$Mn study, 62
modern fluvial muds and sands, 31
Quanah Granite, 2
Tishomingo meteorite, 137
uranium-bearing dikes, Wichita Mountains, 5
uranium mineralization, 194, 269
water analyses for uranium, 194, 269
Wichita Granite Group, 2
zinc-mine-water analyses, 202, 203

**Geomorphology:**
Bryan County, 131
Custer County, 67
Homing Valley, 105
Red River Valley, 261
spoil-bank erosion, Okmulgee County, 102
Wichita Mountains, 90

**Geophysics:**
geomagnetism: Carlton Rhyolite, 267; Nemaha Ridge evaluation, 168; Ouachita Moun-
tains, 265; Ozark Uplift, 265
goethite and magnetite, 100
history of geophysical prospecting, 244
Midcontinent gravity anomaly, 168
Nemaha Ridge evaluation, 168
Oklahoma Geophysical Observatory, 164
seismology: Anadarko Basin analysis, 80; Cleveland sand study, 160, 161; earthquake-
recording network, 164; earthquakes, 9, 142, 157, 180, 236, 237, 274; exploration for
stratigraphic traps, South Ceres Field, 54; geoseismic model, Morrow-Springer sands,
Watonga-Chicakasha trend, 38; Oklahoma seismograph network, 98; teleseismic
data, travel-time residuals, 98

**Hydrogeology, Hydrology:**
flooding, see Environmental Geology
ground-water levels: Antlers aquifer, 51, 118; general, 96
Oklahoma Geological Survey programs, 175
resources: Antlers aquifer, 118; zinc-mine water, 203
storm-water management, 132

subsurface waters: Antlers aquifer, 51, 118; Arbuckle aquifer, 66, 122; Arkansas River Basin, 263; Boone aquifer, 150; Bryan County, 131; Cimarron River Valley, 18; Custer County, 67; eastern Oklahoma, general, 121; El Reno aquifer, 122; general, 96; Marlow aquifer, 67, 122; Paluxy Formation aquifer, 29; Red River Basin, 264; Rush Springs aquifer, 67, 122; Vamoosa aquifer, 53; Wichita Mountains area, 122; zinc-mine water, 202, 203

surface waters: Arkansas River, 31, 33, 141, 234, 263; Boswell Reservoir, 131; Bryan County, 131; Canadian River, 31; central Oklahoma, 270; Choctaw Creek, 132; Cimarron River Valley, 18, 31, 141; Custer County, 67; flood-peak records, 132; Foss Reservoir, 67, 173, 183; general, 133, 134, 143; high-flow records, 133; Kiamichi River, 31; Lake Carl Blackwell, 33; Lake Texoma, 131; low-flow records, 134; Red River, 221, 222, 223, 261, 264; Washita River, 31, 173, 183

U.S. Geological Survey programs, 262

water quality: Anders aquifer, 51, 118; Arbuckle aquifer, 66, 122; Arkansas River, salt pollution, 141; Arkansas River Basin, 263; Boone aquifer, 150; El Reno aquifer, 122; ground water, central Oklahoma, 270; ground water, eastern Oklahoma, 121; ground water, Wichita Mountains area, 122; Marlow aquifer, 122; Red River Basin, 264; Rush Springs aquifer, 122; Vamoosa aquifer, 53; Washita River, 173, 183; zinc-mine water, 202, 203

indexes: echinoids, 152; Oklahoma geology, 1977, 107; Oklahoma Geology Notes, v. 38, 193

maps: oil and gas road map, 198; structural-contour map of Pennsylvanian, 79; Wichita Mountains, mapping project, 95

Marietta Basin, 131

memorials: Carl Colton Branson, 271; William Eugene Ham, 251; Malcolm C. Oakes, 57, 108

meteorites: Keyes chondrite, exposure age, 62; Tishomingo meteorite, 137

MINERAL INDUSTRIES:

commodities: ammonia plant, 70; brick manufacturing, 67; cadmium, 52; carbon black, 12, 72; cement, 11, 12, 13, 273; clay and shale, 7, 11, 12, 13, 67, 195; coal, see Coal; copper, 12, 46, 195; crushed stone and aggregate, 210; feldspar, 11, 13; gallium, 197; germanium, 260; glass sand, 12, 13, 230; granite, 195, 210; gypsum, 11, 12, 13, 67, 139, 195, 206, 268; helium, 11, 12, 13, 36; iodine, 11, 13, 45, 135; lead and zinc, 12, 13, 195, 202; lime, 13; lithium, 44; nitrogen, 70; novaculite, 124; pumice (volcanic ash), 11, 12, 13, 67, 177, 195; salt, 11, 12, 13, 67, 71, 142, 195; sand and gravel, 11, 12, 13, 64, 67, 195; silver, 12; stone, 11, 12, 13, 67, 195, 210; sulfur, 227; thorium-processing plant, 146; tripoli, 3, 11, 12, 13, 124, 149, 195, 207; uranium, 2, 5, 12, 67, 145, 269; vermiculite-exfoliating plant, 103

mine disasters, 195

mined-lands inventory, 170

mined-lands reclamation, 102, 170, 195, 268; Oklahoma Geological Survey programs, 175

Oklahoma Geological Survey programs, 13, 175

producers: cadmium, 52; coal, see Coal; gallium, 197; general, 12, 195; glass sand, 230; gypsum, 139, 206; tripoli, 3

regulations, 12, 13, 170, 195

statistics, 7, 11, 12, 13, 70, 71, 72, 75, 177, 195, 206, 210, 273

technology, 40, 78, 230, 268

transportation, 13

U.S. Geological Survey programs, 13

MISSISSIPPIAN:

Arkansas Novaculite, 124, 149

Boone Formation, 150, 202, 207

Burlington Shelf, 163

Caney Shale, 131

Delaware Creek Shale, 143

Fayetteville Formation, 143, 238

Goddard Shale, 131, 143
Hindsville Formation, 219
Keokuk Formation, 207
Misener Sandstone, 155
Ouachita and Ozark areas, Arkansas, 26
Pitkin Formation, 39, 219, 238
St. Joe Formation, 163
Springer Formation, 114, 131
Stanley Shale, 143, 162, 181
Sycamore Sandstone, 35
Warsaw Formation, 207
Woodford Shale, 131, 143, 155

Muenster Arch, 184
Nemaha Ridge: geologic history, 168; seismic study, 168; structure and tectonics, 79, 81, 84, 114, 157, 168
Northeast Oklahoma Shelf, coal, 77

Oklahoma Geological Survey:
annual report, July 1, 1977–June 30, 1978, 175
coal programs, 12
energy programs, 175
hydrologic investigations, 175
mineral investigations, 175

Oklahoma Geophysical Observatory, 164
Oklahoma Platform, structure, 79, 157

Ordovician:
Arbuckle Group, 66, 81, 82, 83, 84, 122, 157, 186, 214, 217, 218, 219, 246, 252: Cool Creek Formation, 81, 217, 218, 246; Kindblade Formation, 81, 214, 246, 252; McKenzie Hill Formation, 81; West Spring Creek Formation, 81, 219, 246
Bigfork Chert, 16
crinoids, 24
Fernvale Formation, 131, 166
Ouachita and Ozark areas, Arkansas, 26
Simpson Group, 21, 24, 131, 157, 158, 165, 166, 167, 201, 233, 241, 252, 272:
Bromide Formation, 21, 24, 131, 157, 158, 166, 167, 233, 272: Mountain Lake Member, 166; Pooleville Member, 166
correlations with Arkansas equivalents, 241
Joins Formation, 21, 131
McLish Formation, 21, 131, 252, 272
Oil Creek Formation, 21, 131, 252, 272
porosity of Simpson orthoquartzites, 201
Tulip Creek Formation, 21, 131, 272
Sylvan Shale, 1, 127, 128, 131, 157, 166, 272
Viola Limestone, 1, 21, 131, 157, 166, 272
Womble Shale, 16

Ouachita Mountains:
Arkansas Novaculite, 124
Backbone Anticline and Fault, 4, 47
Benton-Broken Bow Uplift and Fault Zone, 215
Chotaw Fault, 47, 55, 81
conodonts, 99
paleomagnetism, 265
Paleozoic geology, Arkansas, 26
sedimentology, 26, 81, 99, 181, 226
source of Anadarko Basin Virgilian deposits, 209
source of Paluxy Formation sediments, 29
Stanley Shale, "tight gas," 162
structure and tectonics, 47, 55, 81, 84, 131, 215, 226, 249
OZARK MOUNTAINS:
  Miami Graben, 185
  paleomagnetism, 265
Paleozoic geology, 26, 163, 185
  Rialto Basin, 185
  sedimentology, 26, 163
  Seneca Fault and Graben, 185
  structure, 185

PALEOBOTANY:
  acritarchs, Ordovician, 166
  algae: Boyd and McCully Formations, 278; general, 276; Ordovician, 252; Pleistocene, 225
  Hartshorne coals, 47
  microphytoplankton, Ordovician, 166

PALEOECOLOGY, PALEOENVIRONMENTS, PALEOGEOGRAPHY:
  Appalachian-Ouachita continental margin, 249
  Arbuckle Group, 83, 218
  Arkoma Basin, 47, 119
  Atokan, 119
  Cambro-Ordovician, Arbuckle area, 218
  Francis Formation, 112
  Hominy Creek Valley, 105
  karst paleotopography, 128
  Little Cane Creek Valley, 106
  Mississippian, Ozark area, 163
  Ordovician-Devonian, central Oklahoma, 127
  paleocurrents, Carboniferous, Ouachitas, 181
  Permian, 125, 142
  Pleistocene Lake Buffalo, 225
  Wapanucka Formation, 99

PALEOZOOLOGY:
  bioherms, 19
  blastoids, 147, 148
  brachiopods, 8, 219
  bryozoans, 171, 219
  cephalopods, 219, 258, 259
  chitinozoans, 1
  conodonts, 15, 99, 185, 242, 266
  crinoids, 24, 73, 74, 182, 233, 238, 239, 240
  echinoderms, 219
  echinoids, 152, 158
  foraminifers, 185, 219
  fossil communities: Francis Formation, 112; Pleistocene, 225
  gastropods, 165, 225
  graptolites, 16
  molluscs, 225
  nautiloids, 259
  neoteny in crinoids, 233
  ostracodes, 219, 225
  pelecypods, 219
  sponges, 213, 214
  stromatoporoids, 19
  trilobites, 248
  vertebrates: amphibians, 179; bibliography, 231; fish, 211, 277; pelycosaur, 232
  palynology: alteration of pollens in sediments, 104; Hominy Creek Valley, 105; Quaternary pollens, interpretation of diagrams, 104
Pennsylvanian:

algae, 276

Atokan Series, Atoka Formation, Atoka Group, 4, 10, 47, 55, 99, 119, 143, 172, 181, 242, 243, 278: Morrowan-Atokan boundary, 99, 143; Red Oak sands, 119; Spiro sands, 119, 192

caliche, 56

Desmoinesian Series:

Atoka Formation, Atoka Group, see Atokan Series

Cabaniss Group: Senora Formation, 77, 143; Stuart Shale, 143

Cherokee Group, Cherokee sands, 28, 60, 61, 115; Burbank sand, 50; Prue sand, 28; Red Fork sand, 28; Skinner sand, 28

conodonts, 266

Deese Group, Deese Formation, 21, 131, 213

Krebs Group, 4, 47, 55:

Boggy Formation, 55, 77, 143

Harshorne Formation, Harshorne coals, 4, 47, 55, 76, 77

McAlester Formation, 4, 47, 55, 77, 143: Cameron Sandstone Member, 4, 47; Keota Shale Member, 4, 47; Lequire Sandstone Member, 4, 47; McCurtain Shale Member, 4, 47; Stigler coal, 4, 47; Tamaha Sandstone Member, 4, 47; Warner Sandstone Member, 4, 47

Marmaton Group, 79, 115, 157: Bandera Formation, 143; Holdenville Shale, 143; Labette Shale, 143; Nowata Shale, 143; Oologah Formation, 79, Altamont Limestone Member, 79; Oswego Limestone, 79, 157; Weturma Shale, 143; Wewoka Formation, 143, 213, 239, 258, 259

Gearyan Series: Council Grove Group, Foraker Limestone, 157; Oscar Group, 143, 277; Vamoosa Formation, 53, 69, 143; Vanoss Group, 143

Missourian Series:

Hoaxbar Group, 21, 79, 80, 115, 157, 228, 253, 254, 255: Belle City Limestone, 80; Checkerboard Limestone, 21, 79, 157; Cottage Grove Sandstone, 115, 253, 254, 255; Haskell Limestone, 80; Hogshooter Limestone, 21, 157; Huber sand, 21; Layton sand, 115, 157; Marchand sands, 14, 228; Tonkawa Limestone, 80, 115; Tuley sands, 21

Lansing-Kansas City Group, 255

Ochelata Group, 115, 239, 253, 254, 255: Cottage Grove sand, 115, 253, 254, 255; Wann Formation, 239

Skiatook Group: Cleveland sand, 160, 161; Francis Formation, 112; Seminole Formation, 77, 143

Morrowan Series:

bioherms, 19

Bloyd Formation, 147, 219, 240, 242, 243, 278, 279: Brentwood Limestone Member, 147, 240, 242, 278; Dye Shale Member, 242, 278; Kessler Limestone Member, 242, 243, 278, 279; Trace Creek Shale Member, 242, 243, 278, 279; Woolsey Member, 242, 278

Dornick Hills Group, 38, 131, 143, 189, 190, 247: Cunningham sandstone, 247; Goddard Formation, 131, 143; Springer Formation, 38, 131, 189, 190, 247

growth faults, Arkoma Basin, 172

Hale Formation, 147, 219, 242: Prairie Grove Member, 147

Jackfork Sandstone, 181

Johns Valley Shale, 143, 181

McCully Formation, 147, 278: Chisum Quarry Member, 147, 278; Greenleaf Lake Limestone Member, 147, 278; shale "A" member, 278; shale "B" member, 278

Morrowan-Atokan boundary, 99, 243

Morrowan-Atokan deposition, 172

Morrow sands, 38, 45, 187, 189, 190

Sausbee Formation, 147, 240: Braggs Member, 240; Brewer Bend Limestone Member, 240

Wapanucka Formation, 79, 99, 148
Ouachita and Ozark areas, Arkansas, 26
Pennsylvanian-Permian orogenic faulting, Ouachitas, 226
Virgilian Series:
   Anadarko Basin, 208, 209
   arkosic facies, 111
   Cisco Group, 21
   Council Grove Group, 157
   Heebner Shale, 208, 209, 266
   Lecompton Limestone, 157
   Oread Limestone, 157
   Oscar Group, 143, 277
   Pawhuska Formation, 157
   Vamoosa Formation, 53, 69, 143: Gypsy Sandstone Member, 69; Vamoosa aquifer, 53
   Vanoss Group, 143

Permian:
   amphibians, 179
   arkosic facies, Lower Permian, 111
   caliche, 56
   Cimarronian Series, Cimarron Group, 46, 122, 140, 141, 142, 143, 184, 232, 277:
      El Reno Group, 122, 139, 141, 142, 143, 268:
         Blaine Formation, 122, 125, 139, 142, 268: Cedar Springs Dolomite Bed, 125;
         Haskew Gypsum Member, 125; Medicine Lodge Gypsum Member, 125;
         Nescatunga Gypsum Member, 125; Shimer Gypsum Member, 125; Van
         Vactor Member, 139
      Chickasha Formation, 122
      Dog Creek Shale, 143
      Flowerpot Shale, 125, 141, 142, 143
   Hennessey Group, Hennessey Shale, 122, 143, 232, 277: Bison Shale, 143; Fairmont
      Shale, 143
   Post Oak Formation, 122, 184
   salt deposits, 140, 141, 142
   Sumner Group, 46, 122, 142, 143, 232, 277: Garber Sandstone, 122, 143, 232, 277;
      Wellington Formation, 46, 122, 142, 143
   Cimarron River Valley, 18
   Custer County, general, 67
   Custerian Series:
      Elk City Sandstone, 67
      Foss Group, 67, 122, 139, 143: Cloud Chief Formation, 67, 122, 139; Doxey Shale,
      67, 143
      Whitehorse Group, 67, 122: Marlow Formation, 67, 122; Rush Springs Formation,
      67, 122
   Gearyan Series, see Pennsylvanian, Gearyan Series
   gypsum districts, 139
   paleogeography, 142
   red beds, alteration over petroleum deposits, 68
   salt deposits, 140, 141, 142
   uranium, 67, 184, 194

Petroleum and Natural Gas:
   accumulation, entrapment, and reservoirs: Arbuckle Group, 81, 82, 83, 84; Atokan,
   Arkoma Basin, 119; Cleveland sand, 160, 161; Cottage Grove Sandstone, 253, 254,
   255; Hunton Group, 126, 127, 128; Marchand sands, Binger fields, 14; Marshall
   County, structural trapping, 178; Misener sand, 155; Morrow-Springer sands, 189,
   247; Paluxy Formation, 29; relation to geothermal-gradient anomalies, 32; Simpson
   sands, 201, 241; South Ceres Field, 54; Southwest Davis Field, 272; Tuley sand-
   stone, Northwest Butterfly Field, 21
   alteration of red beds over petroleum accumulations, 68
Anadarko Basin, see Anadarko Basin

depth wells, 138, 159, 174, 200, 235, 245

enhanced recovery, 6, 25, 30, 50, 59, 97, 154, 162, 187, 220, 256, 275

exploration and development: Anadarko Basin, 12, 58, 80, 174, 186, 187, 189, 190, 191, 200, 235; Arbuckle Group, 81, 82, 83, 84, 186; Arkoma Basin, 12, 174, 241; Beckham County, 58; Bryan County, 131; Delaware-Childers Field, 25; Devonian shales, 162; general, 12, 34, 59, 117, 144, 174, 199, 200, 245; helium production, 36; history, 34, 109, 244; Marshall County, 129, 178; methane recovery, 162; Mills Ranch complex, 138; Morrow-Springer sands, 189, 190; North Burbank unit, 154; North Stanley Field, 50; Oklahoma City Field, 109; reservoir-simulation production study, 85; Sholom Alechem Field, 35; Sho-Vel-Tum, 113; Simpson equivalents, Arkansas, 241; Sooner trend, 58, 113; South Ceres Field, 54; southern Oklahoma, 191; use of computers in drilling, 159

fields, trends, units: all fields, 11, 12, 13, 117, 199; Aylesworth, 131, 178; Bilbo, 178; Chickasha, 190, 228; Cogar South, 190; Coyle, 128; Cumberland, 131, 178; Delaware-Childers, 25, 97, 220; Dietrich, 190; Durant, 131; East Binger, 14; East Meridian, 128; East Velma, 220; giant oil fields, 109, 117; Healdton, 81, 82, 84; Langston, 128; Little Washita, 190; Madill, 178; Marshall County fields, 129, 178; Mills Ranch, 81, 82, 83, 84, 138, 186; North Alma, 30; North Burbank, 6, 30, 97, 154, 220, 256; North Stanley, 30, 50; Northeast Binger, 14; Northeast Garden, 128; Northwest Butterfly, 21; Northwest Norge, 228; Oklahoma City, 82, 84, 109; Prairie Gern, 128; Ramsey, 128; Red Mound, 128; Reydon East, 187; Sholom Alechem, 35; Sho-Vel-Tum, 113, 220; Sooner trend, 58, 113; South Ceres, 54; South Gage, 253, 254, 255; South Goodnight, 128; South Langston, 128; South Merrick, 128; South Perkins, 128; Southeast Brock, 81; Southeast Hoover, 81; Southeast Mannville, 178; Southeast Wilson, 81; Southwest Davis, 272; Southwest Mount Vernon, 128; Southwest Sporn, 128; Springer, 81; Taco, 275; Vinco, 128; Watonga-Chickasha trend, 38; West Mayfield, 81, 82, 83, 84, 138, 186; West Mead, 131; West Meridian, 128

giant oil fields, 109, 117

heavy oils, 60, 61, 174, 220

history of geophysical prospecting, 244

Morrow-Springer geoseismic model, 38

oil and gas road map, 198

Oklahoma Geological Survey programs, 175

origin of oil, kerogen study, 116

Petroleum Data System (PDS), 188

pipelines, 200

producers, 200

projected power and processing plants, 212

statistics: consumption, 49, 113, 156; deep wells, 235; drilling, 59, 117, 144, 199, 245; economics, 11, 12, 13, 59, 113, 117, 156, 174, 235; exploration and development, 113, 117, 156, 199, 245; general, 11, 12, 13, 200; natural gas, general, 156; natural-gas liquids, 37; reserves and resources, 59, 113, 117, 136, 156, 192; stripper wells, 136; waterfloods, 59

stripper wells, 136

subsurface temperatures, 100

Petroleum Data System (PDS), 188

Precambrian: chronology, 17; Raggedy Mountain Gabbro, 92; tectonics, 17; Tishomingo Granite, 66, 131

Quaternary:

Arkansas River Valley, 33
Bryan County, 131
Cimarron River Valley, 18
Custer County, 67
Homing Creek Valley, 105
Little Caney River Valley, 106
Ogallala Formation, 33, 153
pollen alteration, 104
remote sensing. Landsat imagery: exploration, Anadarko Basin, 65; fracture discrimination for pollution susceptibility of rocks, 150
Salt Plains, 141
Sedimentology:
  Anadarko Basin, 14, 21, 80, 111, 189, 208, 209, 247, 253, 254, 255
  Arbuckle Mountains, 20, 81, 83, 167, 217, 218
  Ardmore Basin, 81, 83
  Arkosic facies, Pennsylvanian and Permian, 111
  Bouma sequences, 181
canyon and fan deposition: Cunningham sandstone, 247; Marchand sands, 228; Upper Pennsylvanian, 151
carbonate shelf deposition: Mississippian, Ozark area, 163; Pennsylvanian, Anadarko Basin, 208, 209; Washita Group, 224
Carboniferous, Ouachitas, 181
channel deposition: Cook Creek Formation, 246; Cottage Grove Sandstone, 253, 254, 255; Hartshorne Formation, 4; Marchand sands, 228; Paluxy Formation, 29; Pennsylvanian, Anadarko Basin, 209; Permian sands, 184; Red River, 221, 222, 223; Vamoosa Formation, 69
deltaic deposition: arkosic facies, Pennsylvanian and Permian, 111; Cherokee sands, 28, 61; Hartshorne Formation, 4, 47, 55; Paluxy Formation, 29; Pennsylvanian, Anadarko Basin, 208; Pennsylvanian, Arkoma Basin, 47, 55; Washita Group, 224
diagenesis: authigenic growth of feldspars and cherts, 31; Bromide Sandstone, 167; carbonate compaction and deformation, 219; corststone (caliche) formation, 56; epigenetic chalcoicite in red beds, 46; kerogens, 116; ore deposition, Ouachitas, 226; porosity modification, 219; replacement of evaporites, Cool Creek Formation, 218; secondary cementation, Cottage Grove Sandstone, 253
dish and pillar structures, 181
effect of growth faults on sedimentation, 172
energy-transport processes, Ouachitas, 226
epigenetic chalcoicite in Permian red beds, 46
estuarine deposition, Washita Group, 224
exfoliation, Cambrian granites, 88
flood deposits, Arkansas River, 234
fluvial deposition: Arkansas River Valley, 31, 33, 234; Cimarron River Valley, 18; modern river deposits, 18, 31, 33, 105, 106, 221, 222, 223; Paluxy Formation, 29; Red River, 221, 222, 223
flysch deposits, 47, 181, 226
Hoxbar Group, 80
hydrothermal deposition of carbonates, 257
karst paleotopography, 128
lead/zinc ore deposition, 204
Marietta Basin, 81
Morwan facies, eastern Oklahoma, 278
oolite shoals and inter-shoals. anoxic deposition, Pitkin Formation, 39
origin of novaculite, 124
origin of Silurian dolomite, 128
Ouachita Mountains, 26, 81, 99, 181, 226
Paluxy Formation, 29
Quarry Mountain Formation, biofacies, 8
Red River, 221, 222, 223
salt deposition, 142
shallow-marine deposition: Boyd and McCully Formations, 278; Bromide Formation, 167; Cottage Grove Sandstone, 253, 254, 255
Southern Oklahoma Aulacogen, 218
strandplain deposition, Paluxy Formation, 29
stomatalites, 218
tidal deposition: Bromide Formation, 167; Cool Creek Formation, 217, 218; Marchand sands, 14; peritidal carbonates, Cool Creek Formation, 218; Permian sands, 184
transgressive-regressive sequences, 111, 218
turbidites: Carboniferous, Ouachitas, 181; Red Oak sands, 119
uranium deposition, 269
Wichita Mountains, 111, 214

**Silurian:**

Hunton Group, Hunton Limestone, 15, 73, 114, 126, 127, 128, 131, 157:
Chimneyhill Subgroup, 15, 127, 128; Clarita Formation, 15, 127, 128; Cochrane Formation, 127, 128; Keel Formation, 128
Henryhouse Formation, 73, 127, 128
Quarry Mountain Formation, 8: Barber Member, 8; Marble City Member, 8
soils: Cimarron River Valley, 18; clay and mineral hydroxyl analyses, 216; Red River basin, 261; soil expansion and contraction, Cimarron River Valley, 18
Southern Oklahoma Aulacogen: breccias, 246; petroleum potential, 191; sedimentology, 218; structure and tectonics, 87, 131, 191, 218, 246, 249

**Stratigraphy (see also under various geologic systems):**
biostratigraphy: Carboniferous, Ozarks, conodont zonation, 185; Clarita Formation, conodont zonation, 15; Morrowan, conodont zonation, 242; Oil Creek Formation, gastropod correlation, 165; Ordovician, conodont zonation, 16; Ordovician, graptolite zonation, 16; Pitkin Formation, crinoid correlation, 238; Quarry Mountain Formation, brachiopod zonation; Wapanucka Formation, conodont zonation, 99
Cambrian: Arbuckle Group, 81, 84; gabbros, Wichita Mountains, 205; Lugert-Reformatory granite contact, 89; mafic rocks, Meers area, 101; Marshall County, 178; Quanah Granite, 92
Cretaceous: Bokchito Formation, 120, 129, 130, 131; Bryan County, 131; Custer County, 67; Marshall County, 178; Washita Group, 67, 131, 224
layered anorhosphes, Wichita Mountains, 63
Mississippian: Marshall County, 178; Pitkin Formation, lithostratigraphy, 39
Ordovician: Arbuckle Group, 81, 84; Marshall County, 178; Simpson Group, 241
Paleozoic, Ouachita and Ozark areas, general, 26
Pennsylvanian: Boyd Formation, 279; Checkerboard Limestone, 79; Cherokee sands, Noble County, 28; Hoxbar Group, 79, 80; McCully Formation, 278, 279; Marshall County, 178; Morrowan-Atokan boundary, 99, 243; Oswego Limestone, 79; Wapanucka Limestone, 79, 99
Permian: Custer County, 67; Kansas, 125; Red River area, 184
Siluro-Devonian, Marshall County, 178

**Structural Geology (includes tectonics):**
Anadarko Basin, 32, 65, 81, 82, 84, 114, 142, 157, 249
Arbuckle Anticline, 20, 21, 81, 246
Arbuckle limestones, fracturing, 82
Arbuckle Mountains, 20, 21, 66, 81, 84, 131, 178, 246, 267, 272
Ardmore Basin, 32, 131, 249
Arkoma Basin, 4, 10, 47, 55, 119, 131, 172
Backbone Anticline and Fault, 4, 47
Belton Anticline, 20, 21, 131
Benton–Broken Bow Fault Zone, 215
Bokoshe Syncline, 47
Boone Formation, fracturing, 150
Bryan County, 131
Bryan Fault, 131, 178
Cavonal Syncline, 47
Choctaw Fault, 47, 55, 81

148
Clarita Anticline and Fault, 10, 20
Coal Creek Syncline, 4, 47
contemporaneous faulting, Arkoma Basin, 172
Cumberland Anticline, Syncline, and Fault, 131, 178
Custer County, 67
Dallas junction, 23
effect of faulting on porosity, 201
Franks Fault Zone, 20
growth faults, Atakan, Arkoma Basin, 119
Hartford Anticline, 55
Heavener Anticline, 55
Hunton Anticline, 20, 21
James Fork Syncline, 4
Keene's fault, 185
Kingston Syncline, 23, 131, 178
lineaments: Oklahoma Platform, 79; Wichita Mountains, 93
McClain County, 157
Madill-Aylesworth Anticline, 131, 178
Marietta Basin, 131
Meers Valley Fault, 131
Miami Graben or Trough, 185
Midcontinent gravity anomaly, 168
Mill Creek-Blue River Fault Zone and Syncline, 20, 21
Milton Anticline, 47
Nemaha Ridge, 79, 81, 84, 114, 157, 168
Northeastern Oklahoma Platform, 128
Northwest Butterfly Field, 21
Oakland Anticline, 178
Oklahoma City Uplift and Fault Zone, 157
Oklahoma Platform, 79, 157
Osage Arch, 81
Osage Mountains, 47, 55, 81, 84, 131, 215, 226, 249
Ozark Mountains, 185
Pennsylvanian-Permian orogenic faulting, 226
Phillips Fault, 10
Pine Mountain Anticline, 55
Poteau Syncline, 55
Precambrian tectonics, 17
Preston Anticline, 23, 131, 178
Ravia fault block or nappe, 131, 178
Reagan Fault Zone, 20, 272
Rialto Basin, 185
ripping, Ouachitas, 249
Seneca Fault and Graben, 185
Southern Oklahoma Aulacogen, 87, 131, 191, 218, 246, 249
Spiro Anticline, 4, 47
Sulphur Fault Zone, 20, 131
Sulphur-Wapanucka Syncline, 20, 21
Tishomingo Anticline, 20, 21, 81, 131
Wasita Valley Fault Zone and Syncline, 20, 21, 131, 178, 272
Waurika Arch, 81
Wichita Mountains, 63, 89, 90, 92, 93, 94, 95, 101, 110, 122, 205, 267

Tri-State Area:
heavy oils, 61
lead isotope study of ores, 22, 229
lead-zinc deposits, origins, 204
stratigraphy and structure, 185
zinc-mine water, 202, 203

Uranium:
Antlers Formation, 269
Custer County, 67
exploration, 174, 175
mineralization, 194, 269
Oklahoma Geological Survey programs, 175
Permian sandstones, 67, 184, 194
processing plant, 145
projected power plants, 212
Quanah Granite, 2
relation to asphalt deposits, 269
relation to hydrocarbons, 194
south-central Oklahoma, 194
water analyses for uranium, 194, 269
Wichita Mountains, 2, 5, 174
Waurika Arch, 184

Wichita Mountains:
algae, 252
arkosic facies, Virgilian and Lower Permian, 111
carbonate mounds, Kindblade Formation, 214
granites, 2, 87, 88, 89, 90, 91, 92, 93, 94, 95, 101
ground water, 122
highest point, 90
intrusive relations of gabbros, 205
layered anorthosites, 63
Lugert-Reformatory granite contact, 89
mafic rocks, Meers area, 101
magnetite-ilmenite-olivine rocks, 110
mapping project, 95
sedimentology, 111, 214
source of Oklahoma Permian deposits, 184
structure, 63, 89, 90, 92, 93, 94, 95, 101, 110, 122, 205, 267
subsurface arkosic facies, 111
uranium, 2, 5, 145, 174

Oklahoma City to Host Water-Well Convention

The Myriad Convention Center in downtown Oklahoma City will serve as headquarters for the annual convention and exposition of the National Water Well Association October 7-10. The meeting will be highlighted by 25 practical workshops covering such topics as business, finance, law, and specific drilling techniques.

More than 300 booths, including many displays of heavy equipment, will present the ground-water industry's latest tools and techniques.

The registration fee for the meeting has been set at $25.00. For further information, contact Alice Vickerman, National Water Well Association, 500 West Wilson Bridge Road, Worthington, Ohio 43085 (phone, 614—846-9355).
Tulsa Locale Draws Earth-Science Editors

Editors, publishers, and writers in the earth sciences should make plans now to attend the 13th annual conference of the Association of Earth Science Editors in Tulsa October 14–17. Headquarters for the meeting is the recently restored Mayo Hotel, on the downtown Tulsa Mall, only a short walk from the new Williams Center complex, which includes the multi-theater Performing Arts Center, the Williams Plaza Hotel, and the Forum shopping center and ice rink. The conference is being sponsored locally by the Society of Exploration Geophysicists and The American Association of Petroleum Geologists.

General chairman for the meeting is Jerry W. Henry of SEG. Assisting Jerry with the local arrangements are Roy Graves of Petroleum Abstracts and Gary D. Howell of AAPG. William D. Rose, Oklahoma Geological Survey, is serving as program chairman, assisted by Robert E. Davis, U.S. Geological Survey; Jerry M. Henry, SEG; Ira A. Lutsey, AAPG; Judy A. Russell, Mobil Oil Corp.; and Nancy J. Tamamian, USGS.

Following a welcoming reception Sunday evening, Monday morning's session will be called to order by Robert W. Kelley, New Mexico Bureau of Mines and Mineral Resources, as AESE president. The official welcome will be delivered by Charles J. Mankin, OGS director and Oklahoma state geologist. An outline of the program follows.

**Monday, October 15**

**Session: Innovations in Editing and Publishing**
- Judy A. Russell, chairman
- William Kauffman
- Craig W. Brown and Nancy Firestone
- Diane Schnabel and Barbara M. Hillier

**Annual Business Meeting**

**Panel: AESE and Geowriting Education**
- Helen E. Hodgson, chairman
- Robert A. Day
- Wendell Cochran
- John F. McGuire
Panel: Challenges of the Elected Editor
   Robert L. Bates, chairman
   James H. Shea
   Alan H. Coogan

Tuesday, October 16

Panel: The Editor and the User of Geoscience Information
   Aphrodite Mamouilides, chairman
   Jo Anne DeGraffenreid
   Jay Fussell
   Kenneth S. Johnson

Session: Update '79
   Thomas F. Rafter, Jr., chairman
   Julia A. Jackson
   Jean E. Thyfault

Session: New Developments in Graphics
   Nancy J. Tamamian, chairman
   James Pinkerton
   Brian Fine

Field Trip: Geology and Tulsa's Urban Development
   Gary D. Howell, leader

Reception and Annual Banquet
   Paul L. Lyons, speaker

Wednesday, October 17

Workshop: Direct-Mail Marketing of Geological Publications
   Ronald L. Hart and Gary D. Howell

In addition to the formal program, optional tours can be arranged for visits
to such places as Petroleum Publishing Co., AAPG headquarters, Petroleum
Abstracts offices, Oral Roberts University, and the Gilcrease and Philbrook art
museums.

Ample display space is available in the Mayo Hotel, and participants are
couraged to bring samples of their publications and compare styles and formats.

By registering before October 1, those planning to attend can save $10.00.
The preregistration fee for members is $40.00, and for nonmembers, $50.00. The
fee includes the welcoming reception, one luncheon, the field trip, the reception
and annual banquet, and refreshment breaks each day.

For further information, contact Jerry W. Henry, P.O. Box 3098, Tulsa,
Oklahoma 74101 (phone, 918—743-1365).

ICCP MEETS IN URBANA, ILLINOIS

The International Committee on Coal Petrology (ICCP) held its annual
meeting on the campus of the University of Illinois, in Urbana, May 18–19, 1979,
two days before the International Congress of Carboniferous Stratigraphy and
Geology (IX-ICC) convened. Sixty ICCP participants hailed from 16 countries. Highlights of the meeting follow.

1. Additional copies of the second edition (1963) of the *Glossary of Coal Petrology* will be made available as soon as they can be obtained from the stock of a French publisher.

2. *The Textbook of Coal Petrology* (Stach and others, 1975) will have some 50 pages added and will be reprinted with corrections. These 50 pages might be available as a separate supplement.

3. Differentiation of coal macerals (i.e., vitrinite, exinite, and inertinite) from bitumenite (i.e., gilsonite and asphaltite) by microsolubility, fluorescence, and reflectance techniques was confirmed by tests on identical samples by 12 laboratories. Recommendations to improve standards and techniques of differentiation of these organic constituents of sedimentary rocks included shortening the time from sample collection to analysis and the exclusive use of optical analysis. Immersion oil and benzene dissolve gilsonite, it was noted. Classification of bitumens is based on the solubility of wurtzilite, which moved as a fluid and was consolidated without bacterial action in sedimentary rocks in the Uinta Basin of Utah.

4. Reflectance or rank of macerals was found to vary with time. Thus rank is not exactly a measurement of paleotemperature but a measurement of maturation. Therefore, paleotemperatures cannot be measured precisely. (Some researchers at petroleum laboratories may be interested in this conclusion, because of their own efforts to make a positive correlation.)

5. Reflectance differentiation between vitrinite and inertinite in particles of very fine size (less than 120 mesh) is difficult because of overlapping reflectance ranges.

6. (Metallurgical) coke strength generally is highest if the coal contains 50 percent vitrinite. But if a coking coal contains less than 50 percent vitrinite, exinite and grain size also affect the coke strength. Australian coal that contains low-rank inertinite decreases coke strength and induces increased shrinkage during coking.

A great honor came to the ICCP when one of its most active members, Dr. Peter A. Hacquebard, was selected by IX-ICC on May 26 as the recipient of the Rheinhardt Thiessen Medal for outstanding research contributions to Carboniferous geology. Dr. Hacquebard has worked for many years as a coal petrologist at the Geological Survey of Canada, is a past chairman of the Coal Geology Division of The Geological Society of America, and has lectured at the past five annual short courses on Coal Geology Fundamentals, convened by S. A. Friedman of the Oklahoma Geological Survey and cosponsored by OGS and the Oklahoma Center for Continuing Education at The University of Oklahoma.

The next annual ICCP meeting has been scheduled for Ostrava, Czechoslovakia, April 14–19, 1980. The new secretary is R. Noël, INIEX, Liège, Belgium.

—S. A. Friedman
AAPG’s New Executive Committee Takes Office

John D. Haun took office July 1 as incoming president of The American Association of Petroleum Geologists, together with his fellow officers. The association is the largest organization of geologists in the world, numbering more than 22,000 members.

President Haun is a professor of geology at the Colorado School of Mines in Golden as well as a consultant in the Rocky Mountain area. He is a former president of both the American Institute of Professional Geologists and the Rocky Mountain Association of Geologists. He has been an AAPG member since 1950.

Also taking office is AAPG’s new president-elect, Robey H. Clark. A member of AAPG since 1947, Clark is group vice-president for exploration and production with Diamond Shamrock Corp., Amarillo, Texas.

Serving as AAPG vice-president is D. Keith Murray, vice-president of the Research Institute at the Colorado School of Mines, formerly of the Colorado Geological Survey.

Myron K. (Mike) Horn is beginning a 2-year term as the association’s editor. He is director of exploration and production research for Cities Service Co. in Tulsa. Mike took over from another Oklahoman, John W. Shelton, Oklahoma State University, Stillwater, who just completed his second 2-year term as editor.

Rounding out the AAPG executive committee are Donald R. Boyd, secretary, an independent from Corpus Christi, Texas; George B. Pichel, treasurer, an exploration geologist with Union Oil Co. of California; and Louis C. Bortz, Amoco Production Co., Denver, chairman of the House of Delegates.
Another Oklahoman holding an important AAPG office is Herbert G. Davis, an Oklahoma City consultant, who has just begun a term as president of the Division of Professional Affairs. Serving with Herb are Richard G. House as the division’s vice-president and Donald R. Hembre, secretary-treasurer.

New officers of the association’s Energy Minerals Division are Frederick R. Scheerer, president; John A. Pederson, vice-president; and Robert L. Fuchs, secretary-treasurer.

OGS Issues Publications on Custer County, Earthquakes and Its Own Maps and Reports

Several publications have been issued recently by the Oklahoma Geological Survey. All can be obtained from the Survey’s offices at 830 Van Vleet Oval, Room 163, on The University of Oklahoma campus, or by writing to the address on the front cover. Prices for each are given under individual descriptions.

Geology of Custer County

Bulletin 114, *Geology and Mineral Resources (Exclusive of Petroleum) of Custer County, Oklahoma*, is divided into three main sections: Part I, covering stratigraphy and general geology, and Part II, on economic geology, were prepared by Robert O. Fay, OGS geologist. Part III is a section on ground-water resources by D. L. Hart, Jr., a hydrologist with the U.S. Geological Survey, Water Resources Division, in Albuquerque, New Mexico, formerly of Oklahoma City. An appendix of measured stratigraphic sections completes the 88-page report.

Accompanying the book are three large, folded plates in a separate map case, all prepared by Bob Fay. Plate 1 consists of a geologic map and sections of Custer County at a scale of 1:62,500, or about 1 inch to the mile; also shown on the plate is the approximate route of the historic Whipple expedition of 1853. Plate 2 presents a series of maps showing the thickness and structure of several stratigraphic units within the county. Plate 3 shows two east-west stratigraphic correlation sections that incorporate information from sample and geophysical well logs.

Custer County embraces an area of about 1,000 square miles in central western Oklahoma, which includes Foss Dam and Reservoir. Principal cities are Weatherford and Clinton.

Most of the stratigraphic units that crop out in Custer County are Late Permian in age. In addition, blocks of the Early Cretaceous Kiowa Formation and Dakota Group are present as isolated outliers in the western part of the county. Extensive Pleistocene terrace deposits blanket the central and western areas, and recent alluvium is present along major streams.
Aside from petroleum resources, which are not treated in this study, Custer County’s geologic resources that have been developed commercially include clay, volcanic ash, gypsum, and ground water. Additional resources of minor economic potential are salt, sandstone, dolomite, and sand and gravel.

Bulletin 114 sells for $8.50 paperbound and $12.50 hardbound.

Earthquake Map and Report

_Earthquake Map of Oklahoma_, with an accompanying 15-page text entitled _Inventory, Detection, and Catalog of Oklahoma Earthquakes_, has been released as Map GM-19 by the Survey. The map offers a complete tabulation of known earthquakes, keyed to map localities, with relative intensities and magnitudes indicated. The map scale is 1:750,000, or 1 inch equals approximately 12 miles. The earthquake epicenters are divided into four major color-coded categories and arranged according to intensity values and time periods.

The publication shows that 182 earthquakes are known to have occurred within the State since 1900 and that most of these have been recorded since 1952. The most memorable and widely experienced earthquake occurred April 9, 1952. Centered in Canadian County, west of Oklahoma City, and known as the El Reno earthquake, the tremor affected most of the State and was felt in surrounding states and as far away as Iowa and Nebraska. The first shock had a magnitude of 5.5 on the Richter scale and an intensity of VII on the modified Mercalli scale and was followed by five aftershocks extending into August of 1952. The El Reno area has experienced other, lesser earthquakes right up to the present time.

Another area of earthquake activity, beginning in 1974, centers around Wilson and encompasses parts of Carter and Love Counties in southern Oklahoma.

Since 1961 the State’s seismic disturbances have been recorded by the Oklahoma Geophysical Observatory at Leonard, near Tulsa. One of the world’s most complete centers for the study of the interior of the Earth, the facility was built in 1961 for Jersey Production Research Co. and was presented to The University of Oklahoma in 1965 by what is now Exxon Corp., when the center became known as The University of Oklahoma Earth Sciences Observatory. Since July 1, 1978, the observatory has been a part of the Oklahoma Geological Survey’s research program.

Compilation of the earthquake map became feasible when the observatory and the Survey began a cooperative 5-year grant program in 1976 with the U.S. Nuclear Regulatory Commission and the States of Kansas and Nebraska to study the seismicity and tectonic relationships of the Nemaha Uplift. At this time the existing seismograph network in Oklahoma was expanded to give adequate statewide coverage, especially for detection and location of small local earthquakes. Presently 10 stations are recording earthquake data in Oklahoma.

Authors of the map and text are James E. Lawson, Jr., and Paul H. Foster, geophysicist with the Oklahoma Geophysical Observatory; Robert L. DuBois, Kerr-McGee research professor with the OU School of Geology and Geophysics; and Kenneth V. Luza, engineering and environmental geologist with the Okla-
homalogical Geological Survey. The authors feel that the map and text provide basic
data to help evaluate the earthquake potential of the State. The data should be
especially useful in determining selection of sites for major construction projects.

GM-19, including the 15-page booklet, can be obtained for $5.00.

Comprehensive Publication List

A comprehensive List of Publications of Oklahoma Geological Survey, 1902–1978 covers the total published output of the Survey. The 75-page typescript volume was compiled by Elizabeth A. Ham, OGS associate editor, and
Claren M. Kidd, assistant professor of bibliography and geology librarian with
The University of Oklahoma.

The book contains a bibliographic listing of both available and out-of-print
bulletins, circulars, mineral reports, guidebooks, maps, hydrologic atlases, edu-
cational publications, and miscellaneous items, with accompanying indexes to
authors, counties, and commodities.

Some of the publications included were issued prior to Oklahoma's ac-
ceptance into the Union as a State in 1907 and therefore antedate the Oklahoma
Geological Survey as such, which was established by constitutional mandate in
1908.

This complete listing of the Survey's publications can be purchased for $2.00.

AAPG Mid-Continent Section to Meet in Tulsa

The Tulsa Geological Society will host the Mid-Continent Section meeting
of The American Association of Petroleum Geologists in Tulsa October 7–9. The
program has been arranged in the form of a Symposium on Pennsylvanian
Sandstones of the Mid-Continent Area. According to Harrison L. Townes,
general chairman for the meeting, the economic importance of this topic is
expected to draw some 800 geologists, which would set a new attendance record.

On Sunday, October 7, Allan P. Bennison, a Tulsa consultant, will lead a
field trip to view outcrops of numerous Pennsylvanian sandstones that produce
oil and gas in the subsurface.

Co-chairmen for the technical program, which will be held Monday and
Tuesday, October 8 and 9, are Ralph W. Disney and Norman J. Hyne. In addition
to abstracts of the papers presented, which will appear in the printed pro-
gram booklet, plans call for publication of the complete papers in a special edition of
the Tulsa Geological Society Digest. This volume can be purchased at the
meeting as well as later.

The headquarters for the meeting will be the Williams Plaza Hotel in down-
town Tulsa, adjacent to the Williams Center Forum, which offers unique shops,
an Olympic-sized skating rink, and several restaurants.

For detailed information about the meeting, including registration fees
and the price of the meeting proceedings, contact Harrison L. Townes, 1510
Fourth National Building, Tulsa, Oklahoma 74119 (phone, 918—587-2419).
OGS Welcomes Bob Eutsler

Charles J. Mankin, director of the Oklahoma Geological Survey, has announced the appointment of Robert L. Eutsler to the Survey staff as minerals geologist.

Bob is working under a grant project administered by Bendix Field Engineering Corp. for the U.S. Department of Energy's NURE (National Uranium Resource Evaluation) program. He is assisting Salman Bloch, OGS uranium geologist, in a survey of uranium occurrences in the $1^\circ \times 2^\circ$ Enid quadrangle, covering Osage, Kay, Noble, and Pawnee Counties; most of Grant and Garfield Counties; and parts of Tulsa, Creek, Payne, Logan, and Kingfisher Counties. James J. Myers, who joined the staff earlier, is working on a similar survey of the Clinton quadrangle.

Bob's assignment involves mapping the surface geology in the Enid quadrangle specifically for uranium prospects, with the goals of evaluating known deposits and generating ideas about possible locations of economic deposits. Bob reports that much of the oil recovered in the area is radioactive, which is an indication of uranium in the subsurface. He states that more information on the subsurface in the area is needed in order to make a valid evaluation of possible economically recoverable deposits.

Bob is a native of Manassas, Virginia, but he moved with his family to Springfield, Ohio, at the age of 12 and attended Ohio schools. He received a B.A. degree in geology from Wittenberg University at Springfield in 1965 and an M.S., also in geology, from Bowling Green University in 1970. His master's thesis is a study of a supratidal algal stromatolite from the Florida Keys.

He served in the U.S. Army from 1966 to 1968. While stationed at Fort Eustace, Virginia, he served as an unpaid sample preparator and assistant in instructing an evening class in geology at the nearby College of William and Mary. He received an early release from the service to teach eighth-grade earth-science courses.
In the summer of 1969 he worked for the exploration division of New Jersey Zinc Co., doing field investigations and geophysical exploration in the Ely, Nevada, region.

Bob was a teaching fellow from 1970 to 1975 at George Washington University, instructing introductory labs and mineralogy and petrology courses while earning his Ph.D. degree. His dissertation is entitled “Petrology of the Keyser Formation (Upper Silurian–Lower Devonian) of the Central Appalachians.”

Prior to coming to the OGS Bob acted as a consulting geologist to engineering and mining companies, doing work involving ERTS (now LANDSAT) imagery analysis of copper porphyry and related ore bodies in northern Mexico and lead-zinc exploration in northern Newfoundland. The project in Newfoundland entailed a study of the lithofacies controlling ore deposition of sphalerite in dolomite, with the goal of predicting the locus of ore deposits. Seven months of field work supervising a geological and drill crew proved his evaluations to be correct.

Bob has published on recent marine carbonates. In fact, his first choice for a dissertation study was lithification processes of the upper structure of reefs off the coast of Jamaica, but after intensive investigation this turned out to be an effort that required the use of heavy equipment that was unobtainable for economic reasons.

Also, disaster set in. He had been named expedition leader of a Jamaica project sponsored by the National Geographic Society and partially funded by the Geological Society of America. Bob and a small crew set sail in his boat from Annapolis—destination Jamaica—but east-southeast of Cape Hatteras they were shipwrecked. After five days at sea in a partially submerged vessel, the party was rescued by the U.S. Coast Guard, to whom Bob says he will be eternally grateful.

One of Bob’s hobbies, incidentally, continues to be sailing. To that outdoor pursuit he adds three others: rock climbing, camping, and skiing.

It is a pleasure to have Bob Eutsler with us.

Annual Missouri Energy Conference to Meet in Rolla

The sixth annual conference and exposition on energy to be sponsored jointly by the University of Missouri at Rolla and the Missouri Department of Natural Resources is scheduled to convene October 16–18 in Rolla at the university.

The meeting’s theme is “Energy Alternatives: an Assessment!” No doubt the exclamation point means that the participants will settle down right away to the business at hand and won’t leave until they make an assessment. Certainly the theme is timely in view of President Carter’s proposed program of alternate-energy development.
The conference has been designed to meet the particular needs of social scientists, scientists, and engineers. Topics to be covered include nuclear, solar, and wind energy; fusion; fuel economy in transportation; biomass resources; building energy usage; waste-heat utilization; and the economics, management, and storage of energy.

Several short courses will be conducted in conjunction with the meeting: "Electrical-Energy Conservation," "Solar Cells—Status and Promise," and "Solar Space Heating and Cooling."

An exposition of available energy technology will be set up near the conference site and is open to all organizations interested in taking part.

For further information about the energy conference, including registration fees and housing, contact J. Derald Morgan, Department of Electrical Engineering, University of Missouri at Rolla, Rolla, Missouri 65401 (phone, 314—341-4718).

**Corrections**

A bunch of gremlins must have monkeyed around with our cover-picture descriptions for the last two issues of the *Notes*. We herewith set the record straight:

In the cover description for April 1979 (v. 39, no. 2, p. 50), “bicentennial” in line 1 should read “centennial.” Also, Clarence King, not P. B. King (line 8), was the first USGS director. (Let’s face it, Phil King hasn’t been around that long.)

In the cover description for June 1979 (v. 39, no. 3, p. 82), “Hill Creek” in line 8 should, of course, read “Mill Creek.”

**OKLAHOMA GEOLOGY NOTES**

Volume 39  
August 1979  
Number 4

<table>
<thead>
<tr>
<th>Bibliography and Index of Oklahoma Geology, 1978</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elizabeth A. Ham</td>
<td>111</td>
</tr>
<tr>
<td>Hydraulic Mining Near Mill Creek, Oklahoma</td>
<td>110</td>
</tr>
<tr>
<td>Oklahoma City to Host Water-Well Convention</td>
<td>150</td>
</tr>
<tr>
<td>Tulsa Locale Draws Earth-Science Editors</td>
<td>151</td>
</tr>
<tr>
<td>ICCP Meets in Urbana, Illinois</td>
<td>152</td>
</tr>
<tr>
<td>AAPG’s New Executive Committee Takes Office</td>
<td>154</td>
</tr>
<tr>
<td>OGS Issues Publications on Custer County, Earthquakes, and Its Own Maps and Reports</td>
<td>155</td>
</tr>
<tr>
<td>AAPG Mid-Continent Section to Meet in Tulsa</td>
<td>157</td>
</tr>
<tr>
<td>OGS Welcomes Bob Eutsler</td>
<td>158</td>
</tr>
<tr>
<td>Annual Missouri Energy Conference to Meet in Rolla</td>
<td>159</td>
</tr>
<tr>
<td>Corrections</td>
<td>160</td>
</tr>
</tbody>
</table>

160