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Barry S. Kues

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BIBLIOGRAPHY OF NEW MEXICO INVERTEBRATE PALEONTOLOGY

Barry S. Kues
Department of Earth and Planetary Sciences, MSC03 2040, University of New Mexico, Albuquerque, NM 87131-0001; bkues@unm.edu

Introduction

New Mexico has a rich record of invertebrate fossils, which have been reported in publications since 1848. Several thousand species have been documented from the state, and they represent each of the geologic periods from Cambrian to Neogene. The literature on the invertebrate paleontology of New Mexico is vast. Reference to much of this literature through 1979 was brought together by Kues and Northrop (1981) in a bibliography that included vertebrate and plant as well as invertebrate fossil groups reported in the state. A separate bibliography on vertebrate paleontology was published by Kues and Lucas in 1993, and this has been recently updated by Lewis et al. Much work on New Mexico invertebrate paleontology has been published since 1979, especially by paleontologists associated with the New Mexico Museum of Natural History and Science (which opened in the mid-1980s), the University of New Mexico, and the U. S. Geological Survey. More than 500 papers published since 1979 mark an increase of 67% above the total published through 1979, making a considerably expanded and updated bibliography of invertebrate fossils desirable as an aid to present and future workers.

It is important to understand the criteria utilized in selecting papers to be included in this bibliography. Coverage includes papers dealing with all of the metazoan invertebrate groups, as well as nonphotosynthesizing protistans (chiefly foraminiferans) and conodonts (isolated phosphatic elements of an extinct group of animals that are now considered as probably non-vertebrate chordates). In addition, trace fossils, representing evidence in the sediments of the behavior of invertebrates (such as burrows and trackways) are also included.

Papers dealing in one way or another with invertebrate fossils range from those entirely devoted to description of species and their occurrence, to papers on nonpaleontological aspects of geology in which the presence of “invertebrates” in a rock unit is mentioned in passing. This bibliography focuses on papers providing significant information about the invertebrate paleontology of New Mexico. Foremost among these are publications providing documentation of invertebrate taxa through description and illustration, often with definition of new species, detailed biostratigraphic information, and/or paleoecological interpretation. Also important are papers providing extensive lists of identified taxa from a particular rock unit, even if these taxa are not described or figured. Papers on invertebrate taxa from outside of New Mexico, or which deal with taxonomic changes or evolution within a group, sometimes include discussion and figures of New Mexico specimens, and these papers are also included. Bibliographic catalogs that compile occurrences of all species within a group from an area like North America, and which include New Mexico occurrences are likewise included in this bibliography, as are more general references, like some volumes of the Treatise on Invertebrate Paleontology, which contain description or illustrations of specimens from New Mexico.
Because most marine sedimentary rocks in New Mexico contain fossils, a large number of papers on stratigraphy, sedimentology, sedimentary petrology and regional geology include some mention of invertebrate fossils, typically unidentified except for example as brachiopods, crinoids or bivalves. As most of these types of papers deal only superficially with New Mexico’s paleontological record and present no new or detailed paleontological information they are excluded from this bibliography. One or more taxa identified to the generic or specific level may qualify a paper for inclusion if these taxa are new reports from a stratigraphic unit or a new locality, or are illustrated, or if the report is of unusual historical interest. Likewise, hundreds of papers and several books have been written on the Permian Capitan reef and associated strata in southern New Mexico. The majority of these are excluded from this bibliography because they focus on the structure, architecture, depositional environments, carbonate petrography, or economic geology of the reef complex rather than providing new information on the ancient organisms that built the reef. Similarly, there has been rapid growth in the number of papers applying sequence-stratigraphic approaches to interpreting sedimentary sequences in New Mexico, but unless these contain significant paleontological information they are not listed in this bibliography.

Finally, this bibliography does not cover Quaternary invertebrates (mainly gastropods) because most are extant species and many are not fossilized. Entry into this literature may be achieved through a recent memoir, edited by Metcalf and Smartt (1997), which is cited in the bibliography.

Citations included here are restricted to published papers. Theses and dissertations, and open-file and other unpublished reports are omitted. Published abstracts based on talks presented at professional meetings are not included because they are too short to provide much information, are not subject to peer or editorial review of content, and are (or should be) superceded by papers that would qualify for inclusion.

Coverage of this bibliography is intended to be complete through 2004, with periodic updates planned for the future. Because the record of New Mexico invertebrate paleontology is spread widely through a great variety of publications, some of which are obscure, it is possible that a few references meeting the criteria outlined above have been overlooked. The author would appreciate any omissions being brought to his attention.

A total of 1299 papers are included in this bibliography. The following decade-by-decade distribution of these publications provides a rough indication of the level of activity in studying and publishing upon New Mexico invertebrate fossils through time. Prior to 1940 study of New Mexico invertebrate fossils proceeded at a modest pace, resulting in less than 40 papers per decade. In the 1940s, the number of publications more than doubled over those of the 1930s, and by the 1960s had increased dramatically to more than 150 in that decade. Subsequently (1970s to 2000s), publications have ranged from about 190 to 230 papers per decade.

Number of papers published per decade:
- 1840s = 3
- 1850-1859 = 29
- 1860-1869 = 13
- 1870-1879 = 20
- 1880-1889 = 18
- 1890-1899 = 32
1900-1909 = 35
1910-1919 = 32
1920-1929 = 18
1930-1939 = 38
1940-1949 = 81
1950-1959 = 112
1960-1969 = 157
1970-1979 = 191
1980-1989 = 232
1990-1999 = 195
2000-2004 = 93

Bibliography


Ahr, W. M. and Stanton, R. J. Jr., 1994, Comparative sedimentology and paleontology
of Waulsortian mounds and coeval level-bottom sediments of the lower Lake Valley Formation (Lower Mississippian) in the Sacramento Mountains (New Mexico, USA): Abhandlungen der Geologischen Bundesanhalt, Wien, v. 50, p. 11-24.


Anderson, O. J., 1990, Geology and coal resources of Vanderwagen quadrangle,
McKinley County, New Mexico: N. M. Bureau of Mines and Mineral Resources, Geologic Map GM-64.


Anonymous, 1859, Dr. Newberry’s late explorations in New Mexico—he shows Marcou’s so-called Jurassic to be Cretaceous: American Journal of Science, 2nd series, v. 28, p. 298-299.

Anonymous, 1860, [Review of] Notice of fossils from the Permian strata of Texas and New Mexico, obtained by the United States expedition under Capt. John Pope, for boring artesian wells along the 32d parallel, with description of new species from these strata and the Coal Measures of that region, by B. F. Shumard: American Journal of Science, 2nd series, v. 29, p. 125-126.


Anonymous, 1960, Road log—first day—Las Cruces to Vinton Canyon and Anthony Gap, Pennsylvanian localities in the northern Franklin Mountains; in Northern Franklin Mountains and southern San Andres Mountains with emphasis on Pennsylvanian stratigraphy: Roswell Geological Society, Fall field conference Guidebook, 1960, p. 11-33.


Babcock, J., 1977, Calcareous algae, organic boundstones, and the genesis of the upper Capitan Limestone (Permian, Guadalupian), Guadalupe Mountains, west Texas and
New Mexico; in Hileman, M. E. and Mazzullo, S. J. (eds.), Upper Guadalupian facies, Permian reef complex, Guadalupe Mountains, New Mexico and west Texas: 1977 Field Conference Guidebook, Permian Basin Section, SEPM, publ. 77-16, p. 3-44.


Barnes, H., Beaumont, E. C., Kelley, V. C., Read, C. B. and Zapp, A. D., 1950, Road log,


Beecher, C. E., 1890, North American species of Strophalosia: American Journal of


Blake, W. P., 1856b, Report on the geology of the route, No. 2 – Resume and field notes by Jules Marcou, a translation; in Whipple, A. W., Reports of explorations and surveys to ascertain the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean, v. 3, pt. 4: U. S. 33rd Congress, 2nd Session, Senate Executive Document 78 and House Executive Document 91, p. 121-164.


Bose, E., 1922, On ammonoids from the Abo Sandstone of New Mexico and the age of the beds which contain them: American Journal of Science, 4\(^{th}\) series, v. 49, p. 51-60.


Braddy, S. J., 1998, An overview of the invertebrate ichnotaxa from the Robledo Mountains ichnofauna (Lower Permian), southern New Mexico: N. M. Museum of
Braddy, S. J., 1999, Terrestrial trace fossils from the Robledo Mountains ichnofauna (Lower Permian) of southern New Mexico: Geoscientist, v. 9, no, 7, p. 5-6.


Branson, C. C., 1956, Oklahoma microcrinoids: Oklahoma Geology Notes, v. 16, p. 130.


Campbell, C. V., 1971, Depositional model – Upper Cretaceous Gallup beach shoreline,


Clifton, R. L., 1946, Middle Permian Cephalopoda from Texas and New Mexico: Journal of Paleontology, v. 20, p. 556-559.


Cline, L. M., 1959, Preliminary studies of the cyclical sedimentation and paleontology of The upper Virgil strata of the La Luz area, Sacramento Mountains, New Mexico; in Guidebook for joint field conference in the Sacramento Mountains of Otero County, New Mexico: Permian Basin Section, SEPM and Roswell Geological Society, p. 172-185.


Cobban, W. A. and Hook, S. C., 1981b, An unusually large specimen of the Turonian ammonite Hoplitoides Von Koenen from New Mexico: N. M. Bureau of Mines and


Conkin, J. E. and Conkin, B. M., 1985, Agglutinate Foraminifera from the Early


Cooper, G. A. and Grant, R. E., 1974, Permian brachiopods of west Texas, II: Smithsonian Contributions to Paleobiology, no. 15, p. 233-793.


Cooper, G. A. and Grant, R. E., 1976a, Permian brachiopods of west Texas, IV: Smithsonian Contributions to Paleobiology, no. 21, p. 1923-2607.


Correa, A. C., 1970, Borrego Pass Lentil, a new member of the Crevasse Canyon Formation, southern San Juan Basin, New Mexico: The Mountain Geologist, v. 7,


Day, J., 1992, Middle-Upper Devonian (late Givetian-early Frasnian) brachiopod
sequence in the Cedar Valley Group of central and eastern Iowa; in Day, J. and Bunker, B. J. (eds.), The stratigraphy, paleontology, depositional and diagenetic history of the Middle-Upper Devonian Cedar Valley Group of central and eastern Iowa: Iowa Department of Natural Resources, Guidebook Series, no. 16, p. 53-105.


Dunham, R. J., 1969, Early vadose silt in Townsend mound (reef), New Mexico; in Friedman, G. M. (ed.), Depositional environments in carbonate rocks: SEPM Special Publication 14, p. 139-181.


Fay, R. O., 1962, New Mississippian blastoids from the Lake Valley Formation (Nunn Member), Lake Valley, New Mexico: Oklahoma Geology Notes, v. 22, p. 189-195.


Flower, R. H., 1968c, Cephalopods from the Tinu Formation, Oaxaca state, Mexico: Journal of Paleontology, v. 42, p. 804-810.


Fritz, M. A., 1944, Upper Devonian Bryozoa from New Mexico: Journal of Paleontology, v. 18, p. 31-41.


Girty, G. H., 1937, Three Upper Carboniferous gastropods from New Mexico and Texas:


Haas, O., 1944, Upper Albian ammonite from mount Taylor country, New Mexico [a Turonian *Prionocyclus*]: Journal of Paleontology, v. 18, p. 289.

Hall, J., 1856. Descriptions and notices of the fossils collected upon the route; *in* Whipple, A. W., Report of explorations and surveys to ascertain the most practicable and economical route for a railroad from the Mississippian river to the Pacific Ocean, v. 3, pt. 4: U. S. 33rd Congress, 2nd Session, Senate Executive Document 78 and House Executive Document 91, p. 99-105.


Hasiotis, S. T. and Mitchell, C. E., 1993, A comparison of crayfish burrow morphologies:


Hazel, J. E., 1969, *Cythereis eaglefordensis* Alexander, 1929—a guide fossil for deposits of latest Cenomanian age in the Western Interior and Gulf Coast regions of the United


Herrick, C. L., 1901, Applications of geology to economic problems in New Mexico: International Mining Congress Proceedings, 4th series, p. 61-64.


Herrick, C. L., 1904b, Laws of formation of New Mexico mountain ranges: American


Field Conference Guidebook 38, p. 161-165.


Hook, S. C. and Flower, R. H., 1977, Late Canadian (Zones J, K) cephalopod faunas


Jeffords, R. M., 1955, Mississippian corals from New Mexico and a related Pennsylvanian species: University of Kansas Paleontological Contributions, 16, Coelenterata, article 3, p. 1-12.


Kauffman, E. G., 1965, Middle and late Turonian oysters of the *Lopha lugubris* group: Smithsonian Miscellaneous Collections, v. 148, no. 6, 92 p.


Kelley, V. C. and Silver, C., 1952, Geology of the Caballo Mountains: University of New Mexico Publications in Geology, no. 4, 286 p.

Kennedy, W. J., 1988, Late Cenomanian and Turonian ammonite faunas from north-east and central Texas: Special Papers in Paleontology, no. 39, 131 p.

Kennedy, W. J. and Cobban, W. A., 1988a, Mid-Turonian ammonite faunas from


Kietzke, K. K., 1989b, Calcareous microfossils from the Moenkopi Formation (Triassic, Scythian or Anisian) of central New Mexico: N. M. Geological Society, Field Conference Guidebook 40, p. 181-190.


Kietzke, K. K., 1992, Reassignment of the Jurassic Todilto Limestone ostracode


King, N. R., 1975, VII. The Mancos Group along the eastern margin of the San Juan Basin—a summary; in Field trips to central New Mexico: American Association of Petroleum Geologists and SEPM Rocky Mountain Section Guidebook, p. 57-66.


Kirk, A. R. and Zech, R. S., 1987a, Geologic map of the Hard Ground Flats quadrangle,


Knight, J. B., 1933, The gastropods of the St. Louis, Missouri, Pennsylvanian outlier: VI, the Neritidae: Journal of Paleontology, v. 7, p. 359-392.


Kottlowski, F. E., 1960b, Depositional features of the Pennsylvanian of south-central New Mexico; in Guidebook for the northern Franklin Mountains and the southern San Andres Mountains with emphasis on Pennsylvanian stratigraphy: Roswell Geological Society, Fall Field Conference, p. 96-130.


Kottlowski, F. E. and LeMone. D. V., 1994a, Day 2 – road log, Alamogordo to Rhodes


Kozur, H. W. and LeMone, D. V., 1995b, New terrestrial arthropod trackways from the Abo Member (Sterlitamakian, Late Sakmarian, Late Wolfcampian) of the Shalem Colony section, Robledo Mountains, New Mexico: N. M. Museum of Natural History and Science, Bulletin 6, p. 107-113.


Kues, B. S., 1983a, Bryozoan and crustacean from the Fruitland Formation (Upper Cretaceous) of New Mexico: New Mexico Geology, v. 5, p. 52-55, 68.

Kues, B. S., 1983b, Cephalopod aptychi from Los Moyos Limestone, Madera Group (Middle Pennsylvanian) near Albuquerque, New Mexico: New Mexico Geology, v. 5, p. 78-80.


Kues, B. S., 1984b, New occurrence of the rare Pennsylvanian brachiopod Cryptacanthia


Kues, B. S., 1985d, Nonmarine mollusks from the Chinle Formation, Dockum Group (Upper Triassic), of Bull Canyon, Guadalupe County, New Mexico: N. M. Geological Society, Field Conference Guidebook 36, p. 185-196.


Kues, B. S., 1987a, Pharkidonotus megalius, a large new gastropod species from the Middle Pennsylvanian of south-central New Mexico: Journal of Paleontology, v. 61, p. 1187-1193.

Kues, B. S., 1987b, A large nautiloid specimen from the San Andres Formation (Permian, Leonardian) near Cloudcroft, New Mexico, with a review of the nautiloids reported from the San Andres Formation: N. M. Journal of Science, v. 27, p. 99-110.


Kues, B. S., 1990, New and little known Middle Pennsylvanian gastropods from the Flechado Formation, Taos County, New Mexico: N. M. Geological Society, Field Conference Guidebook 41, p. 251-258.


Kues, B. S., 2004a, Invertebrate fossils from the type sections of the Gray Mesa and Atrasado Formations (Middle to Upper Pennsylvanian), Lucero uplift, central New Mexico: N. M. Museum of Natural History and Science, Bulletin 25, p. 137-142.

Kues, B. S., 2004c, Marine invertebrate assemblages from the Late Pennsylvanian (Virgilian) Holder Formation, Dry Canyon, Sacramento Mountains, south-central New Mexico: New Mexico Geology, v. 26, p. 43-53.

Kues, B. S., 2004d, Devonian of New Mexico; in Mack, G. H. and Giles, K. A. (eds.), The geology of New Mexico, a geologic history: N. M. Geological Society, Special Publication 11, p. 59-95.


Kues, B. S. and Kietzke, K. K., 1981, A large assemblage of a new eurypterid from the
Red Tanks Member, Madera Formation (Late Pennsylvanian-Early Permian), of New Mexico: Journal of Paleontology, v. 55, p. 709-729.


Lane, H. R., 1975, Correlation of the Mississippian rocks of southern New Mexico and west Texas utilizing conodonts; in Mississippian shelf-edge and basin facies Carbonates, Sacramento Mountains and southern New Mexico: Dallas Geological Society Guidebook, p. 87-97.


Laudon, L. R. and Bowsher, A. L., 1949, Mississippian formations of southwestern New


LeMone, D. V., 1982, Stratigraphy of the Franklin Mountains, El Paso County, Texas,
and Dona Ana County, New Mexico; in Delaware basin field trip guidebook: West Texas Geological Society, publ. no. 82-76, p. 42-72.

LeMone, D. V., 1989, Sequence stratigraphy of the Tobosa basin-related Paleozoic sediments of the Franklin Mountains, El Paso County, Texas, and Dona Ana County, New Mexico; in Cunningham, B. K. and Cromwell, D. W. (eds.), The lower Paleozoic of west Texas and southern New Mexico—modern exploration concepts: Permian Section, SEPM, publ. no. 89-31, p. 71-83.


Leonard, A. B., 1977, Three new pulmonate gastropods from the Tertiary of New


Loew, O., 1875b, Report upon mineralogical, agricultural, and chemical conditions observed in portions of Colorado, New Mexico, and Arizona, in 1873: Report upon Geographical and Geological Explorations and Surveys West of the One Hundredth Meridian [Wheeler Survey], v. 3, Geology, part VI, p. 569-661.


Lucas, S. G., Krainer, K. and Kues, B. S., 2002a, Type section of the Upper


Ma, X. and Day, J., 2000, Revision of Tenticospirifer Tien, 1938, and similar spiriferid brachiopod genera from the Late Devonian (Frasnian) of Eurasia, North America, and Australia: Journal of Paleontology, v. 74, p. 444-463.


Marcou, J., 1858a, Geology of North America; with two reports on the prairies of Arkansas and Texas, the Rocky Mountains of New Mexico, and the Sierra Nevada of California, originally made for the United States Government: Zurich, Zurcher and Furrer, 144 p.

Marcou, J., 1858b, American geology; letter on some points of the geology of Texas, New Mexico, Kansas, and Nebraska; addressed [sic] to Messrs. F. B. Meek and F. V. Hayden: Zurich, Zurcher and Furrer, 16 p.

Marcou, J., 1859, Reply to the criticisms of James D. Dana: Zurich, Zurcher and Furrer, 40 p.


Marcou, J., 1897, Jura and Neocomian of Arkansas, Kansas, Oklahoma, New Mexico, and Texas: American Journal of Science, 4th series, v. 4, p. 197-212.


Meek, F. B., 1861, Reply to Mr. Marcou’s strictures on Mr. F. B. Meek in his notes on the Cretaceous and Carboniferous rocks of Texas: American Journal of Science, 2nd series, v. 32, p. 278-280.


Meek, F. B., 1875, [Descriptions of three new species of Triassic unios from the Gallinas Range, New Mexico]; in Cope, E. D., Report on the geology of that part of northwestern New Mexico examined during the field season of 1874: U. S. Geographical Surveys West of the 100th Meridian [Wheeler Survey], Appendix LL, annual Report of the Chief of Engineers for 1875, p. 83-84.


Meek, F. B., 1877, Paleontology: U. S. Geological Explorations of the 40th Parallel [King
Meek, F. B. and Hayden, F. V., 1858, Descriptions of new species and genera of fossils, collected by Dr. F. V. Hayden in Nebraska Territory, under the direction of Lieut. G. K. Warren, U. S. topographical engineer; with some remarks on the Tertiary and Cretaceous formations of the north-west, and the parallelism of the latter with those of other portions of the United States and territories: Proceedings of the Philadelphia Academy of Natural Sciences, 1857, p. 117-148.

Meek, F. B. and Hayden, F. V., 1859, On the so-called Triassic rocks of Kansas and Nebraska: American Journal of Science, 2nd series, v. 27, p. 31-35.


Miller, A. K., Dunbar, C. O. and Condra, G. E., 1933. The nautiloid cephalopods of the Pennsylvanian System in the Mid-Continent region: Nebraska Geological survey,


Milner, S., 1976, Carbonate petrology and syndepositional facies of the lower San Andres Formation (middle Permian), Lincoln County, New Mexico: Journal of Sedimentary Petrology, v. 46, p. 463-482.


Molenaar, C. M., 1973, Sedimentary facies and correlation of the Gallup Sandstone


Moore, R. C. and Jeffords, R. M., 1945, Description of Lower Pennsylvanian corals from Texas and adjacent states: University of Texas, Publication no. 4401, p. 77-208.


Muehlberger, W. R., 1957, Pennsylvanian outcrops along Brazos uplift, Rio Arriba


78

Survey, Geologic Quadrangle Map GQ-886.


Newell, N. D., 1937, Late Paleozoic pelecypods: Pectinacea: University of Kansas,


Otte, C. Jr., 1959a, Late Pennsylvanian and Early Permian stratigraphy of the northern Sacramento Mountains, Otero County, New Mexico: N. M. Bureau of Mines and

Otte, C., 1959b, The Laborcita Formation of late Virgilian-early Wolfcampian age of the northern Sacramento Mountains, Otero County, New Mexico; in Guidebook for joint field conference in the Sacramento Mountains of Otero County, New Mexico: Permian Basin Section, SEPM, and Roswell Geological Society, p. 196-207.


Pike, W. S. Jr., 1947, Intertonguing marine and nonmarine Upper Cretaceous deposits of
New Mexico, Arizona, and southwestern Colorado: Geological Society of America, Memoir 24, 103 p.


Pinto, I. D. and Sanguinetti, Y. T., 1962, A complete revision of the genera Bisulcocypris and Theriosynoecum (Ostracoda) with the world geographical and stratigraphical distribution (including Metacypris, Elpidium, Gomphocyttherae, and Cytheridella): Escola de Geologia de Porto Alegre, Special Publication no. 4, p. 1-165.


Pope, M., 2002, Early Ordovician El Paso Formation and Late Ordovician Montoya Formation, Rhodes Canyon: N. M. Geological Society, Field Conference Guidebook
53, p. 35-36.


Pray, L. C., 1949, Fourth day—November 9, 1949 road log—Alamogordo to El Paso; in Pre-Permian rocks of trans-Pecos area and southern New Mexico: West Texas Geological Society, Guidebook, Field Trip No. 5, p. 52-64.


Prout, H. A., 1858, Description of new species of Bryozoa from Texas and New Mexico, collected by Dr. George G. Shumard, geologist of the United States expedition for boring artesian wells along the 32nd parallel under the direction of Capt. John Pope, U. S. Corps of Top. Eng.: St Louis Academy of Science Transactions, v. 1, p. 228-235.


Raatz, W. D., Schutter, S. R. and Wilson, J. L., 1994, Missourian strata of the northern


Reid, R. E. H., 1968, Hyalostelia smithii (Young and Young) and the sponge genus Hyalostelia Zittel (Class Hexactinellida): Journal of Paleontology, v. 42, p. 1243-1248.


Sadlick, W., 1960, New name for *Spirifer occidentalis* (Girty) and its geologic history: Journal of Paleontology, v. 34, p. 1210-1214.


Sando, W. J., 1974, Checklist of North American late Paleozoic coral species


Scott, R. W., 1975b, Comanchean cardiid bivalves in Texas; in Geology of the Eagle Mountains and vicinity, trans-Pecos Texas: Permian Basin Section, SEPM, Guidebook Publication 75-15.


Sealey, P. L. and Lucas, S. G., 1997, Paleontology, stratigraphy and biostratigraphy of the Upper Cretaceous Lewis Shale near Waterflow, San Juan County, New Mexico:


Sears, J. D., 1934, Geology and fuel resources of the southern part of the San Juan Basin, New Mexico, Part 1, the coal field from Gallup eastward toward Mount Taylor, with a measured section of pre-Dakota (?) rocks near Navajo Church: U. S. Geological Survey, Bulletin 860-A, 29 p.


Shumard, B. F., 1858a, [On Permian rocks in the Guadalupe Mountains, New Mexico]: St. Louis Academy of Science Transactions, v. 1, p. 113-114.


Shumard, B. F., 1858c, Notice of new fossils from the Permian strata of New Mexico and Texas, collected by Dr. George G. Shumard, geologist of the United States Government expedition for obtaining water by means of artesian wells along the 32d parallel, under the direction of Capt. John Pope, U. S. Corps. Top. Eng.: St. Louis Academy of Science Transactions, v. 1, p. 290-297.

Shumard, B. F., 1859, Notice of fossils from the Permian strata of Texas and New Mexico, obtained by the United States expedition under Capt. John Pope for boring artesian wells along the 32d Paral., with descriptions of new species from these strata and the Coal Measures of that region: St. Louis Academy of Science Transactions, v. 1, p. 387-402.


Simpson, R. D. and LeMone, D. V., 1982, Preliminary biostratigraphic analysis of the Permian sequence of the Jarilla Mountains, Otero County, New Mexico; in Delaware Basin field trip guidebook: West Texas Geological Society, publ. no. 82-76, p. 85-87.


Stainbrook, M. A., 1945, Brachiopoda of the Independence Shale of Iowa: Geological
Society of America, Memoir 14, 74 p.


Stone, R. W., 1917, [Review of] Contributions to the geology and paleontology of San


Swain, F. M., 1946, Middle Mesozoic nonmarine Ostracoda from Brazil and New Mexico: Journal of Paleontology, v. 20, p. 543-555.

Sweet, W. C., 1979, Late Ordovician conodonts and biostratigraphy of the western Midcontinent province: Brigham University Geology Studies, v. 26, pt. 3, p. 45-86.


Theis, C. V., Taylor, G. C. Jr. and Murray, C. R., 1941, Thermal waters of the Hot Springs artesian basin, Sierra County, New Mexico: 14th and 15th Biennial Reports of the State Engineer of New Mexico, p. 419-492.


Thompson, M. L. and Scott, H. W., 1941, Fusulinids from the type section of the Lower Pennsylvanian Quadrant Formation: Journal of Paleontology, v. 15, p. 349-353.


Toomey, D. F. and Cys, J. M., 1977a, Rock/biotic relationships of the Permian Tansill-Capitan facies exposed on the north side of the entrance to Dark Canyon, Guadalupe Mountains, southeastern New Mexico; in Hileman, M. E. and Mazzullo, S. J. (eds.),


Trauger, F. D. and Bushman, F. X., 1964, Geology and ground water in the vicinity of Tucumcari, Quay County, New Mexico: N. M. State Engineer, Technical Report 30, 178 p.


Tyrrell, W. W. Jr., 1964, Petrology and stratigraphy of near-reef Tansill-Lamar strata, Guadalupe Mountains, Texas and New Mexico; in Geology of the Capitan reef complex


Wahlman, G. P., 1988, Subsurface Wolfcampian (Lower Permian) shelf-margin reefs in the Permian Basin of west Texas and southeastern New Mexico; in Permian rocks of the Midcontinent: Midcontinent Section, SEPM, Special Publication no. 1, p. 177-204.


Weidlich, O. and Fagerstrom, J. A., 1999, Influence of sea-level changes on development, community structure, and quantitative composition of the upper Capitan massive (Permian), Guadalupe Mountains, Texas and New Mexico; in Saller, A. H., Harris, P. M., Kirkland, B. L. and Mazzullo, S. J. (eds.), Geologic framework of the Capitan reef: SEPM Special Publication no. 65, p. 139-160.


White, C. A., 1881c, [Note on fossils from Lake Valley, New Mexico]: American Naturalist, v. 15, p. 671.


Wilde, G. L., 1955, Permian fusulinids of the Guadalupe Mountains; in *Permian Field

Wilde, G. L., 1975a, Fusulinid-defined Permian Stages; *in* Permian exploration, boundaries, and stratigraphy: West Texas Geological Society and Permian Basin Section, SEPM, publ. no. 75-65, p. 67-83.


Wilpolt, R. H. and Wanek, A. A., 1951, Geology of the region from Socorro and San Antonio east to Chupadera Mesa, Socorro County, New Mexico: U. S. Geological Survey, Oil and Gas Investigations Map OM-121.


Wilson, J. L., 1977, Regional distribution of phylloid algal mounds in Late Pennsylvanian and Wolfcamp strata of southern New Mexico; *in* Guidebook to the


Wood, G. H. Jr., Northrop, S. A. and Griggs, R. L., 1953, Geology and stratigraphy of Koehler and Mount Laughlin quadrangles and parts of Abbott and Springer quadrangles,
eastern Colfax County, New Mexico: U. S. Geological Survey, Oil and Gas Investigations Map OM-141.


Young, J. A. Jr., 1942, Pennsylvanian Scaphopoda and Cephalopoda from New Mexico: Journal of Paleontology, v. 16, p. 120-125.


Young, K., 1966, Texas Mojsisovicziinae (Ammonoidea) and the zonation of the Fredericksburg: Geological Society of America Bulletin, Memoir 100, 225 p.


